Seminari 8

MATEMATIČKE METODE ZA INFORMATIČARE

Damir Horvat

FOI, Varaždin

Sadržaj

prvi zadatak

Zadatak 1

Odredite dimenziju i jednu bazu vektorskog prostora R svih realnih rješenja homogenog sustava linearnih jednadžbi

$$\begin{aligned} x + 2y + z - 3t &= 0 \\ 2x + 4y + 4z - t &= 0 \\ 3x + 6y + 7z + t &= 0 \end{aligned}$$

i nadopunite dobivenu bazu do baze za $\mathbb{R}^4$.

Rješenje

x	y	z	t	

$$
\begin{aligned}
x + 2y + z - 3t &= 0\\
2x + 4y + 4z - t &= 0\\
3x + 6y + 7z + t &= 0
\end{aligned}
$$

Rješenje

x	y	z	t	
1	2	1	-3	0

$$
\begin{aligned}
x + 2y + z - 3t &= 0\\
2x + 4y + 4z - t &= 0\\
3x + 6y + 7z + t &= 0
\end{aligned}
$$

Rješenje

x	y	z	t	
1	2	1	-3	0
2	4	4	-1	0

$$
\begin{aligned}
x + 2y + z - 3t &= 0 \\
2x + 4y + 4z - t &= 0 \\
3x + 6y + 7z + t &= 0
\end{aligned}
$$

Rješenje

x	y	z	t	
1	2	1	-3	0
2	4	4	-1	0
3	6	7	1	0

$$\begin{aligned} x + 2y + z - 3t &= 0 \\ 2x + 4y + 4z - t &= 0 \\ 3x + 6y + 7z + t &= 0 \end{aligned}$$

Rješenje

x	y	z	t	
1	2	1	-3	0
2	4	4	-1	0
3	6	7	1	0

$$\begin{aligned} x + 2y + z - 3t &= 0 \\ 2x + 4y + 4z - t &= 0 \\ 3x + 6y + 7z + t &= 0 \end{aligned}$$

Rješenje

x	y	z	t	
1	2	1	-3	0
2	4	4	-1	0
3	6	7	1	0

$$
\begin{aligned}
x + 2y + z - 3t &= 0 \\
2x + 4y + 4z - t &= 0 \\
3x + 6y + 7z + t &= 0
\end{aligned}
$$

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1$

$$
\begin{aligned}
x + 2y + z - 3t &= 0\\
2x + 4y + 4z - t &= 0\\
3x + 6y + 7z + t &= 0
\end{aligned}
$$

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	$+$
3	6	7	1	0	$/\cdot 1$

$$\begin{aligned} x + 2y + z - 3t &= 0 \\ 2x + 4y + 4z - t &= 0 \\ 3x + 6y + 7z + t &= 0 \end{aligned}$$

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	$+$
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$

$$\begin{aligned} x + 2y + z - 3t &= 0 \\ 2x + 4y + 4z - t &= 0 \\ 3x + 6y + 7z + t &= 0 \end{aligned}$$

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/ \cdot 1$ $/ \cdot 3$

$$\begin{aligned} x + 2y + z - 3t &= 0 \\ 2x + 4y + 4z - t &= 0 \\ 3x + 6y + 7z + t &= 0 \end{aligned}$$

Rješenje

x	y	z	t	
1	2	1	-3	0
2	4	4	-1	0
3	6	7	1	0 $/\cdot 1$ $/\cdot 3$
3	6	7	1	0

$$
\begin{aligned}
x + 2y + z - 3t &= 0\\
2x + 4y + 4z - t &= 0\\
3x + 6y + 7z + t &= 0
\end{aligned}
$$

Rješenje

x	y	z	t		
1	2	1	-3	0	+
2	4	4	-1	0	+
3	6	7	1	0	$/\cdot 1\ /\cdot 3$
5					
3	6	7	1	0	

$$
\begin{aligned}
x + 2y + z - 3t &= 0\\
2x + 4y + 4z - t &= 0\\
3x + 6y + 7z + t &= 0
\end{aligned}
$$

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
5	10				
3	6	7	1	0	

$$
\begin{aligned}
x + 2y + z - 3t &= 0\\
2x + 4y + 4z - t &= 0\\
3x + 6y + 7z + t &= 0
\end{aligned}
$$

Rješenje

$$
\begin{array}{cccc|c}
x & y & z & t & \\
\hline
1 & 2 & 1 & -3 & 0 \\
2 & 4 & 4 & -1 & 0 \\
3 & 6 & 7 & 1 & 0 \quad / \cdot 1 \ / \cdot 3 \\
\hline
 & & & & \\
5 & 10 & 11 & & \\
3 & 6 & 7 & 1 & 0
\end{array}
$$

+ +

$$
\begin{aligned}
x + 2y + z - 3t &= 0 \\
2x + 4y + 4z - t &= 0 \\
3x + 6y + 7z + t &= 0
\end{aligned}
$$

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
5	10	11	0		
3	6	7	1	0	

$$\begin{aligned} x + 2y + z - 3t &= 0 \\ 2x + 4y + 4z - t &= 0 \\ 3x + 6y + 7z + t &= 0 \end{aligned}$$

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
5	10	11	0	0	
3	6	7	1	0	

$$\begin{aligned} x + 2y + z - 3t &= 0 \\ 2x + 4y + 4z - t &= 0 \\ 3x + 6y + 7z + t &= 0 \end{aligned}$$

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1 \; /\cdot 3$
10					
5	10	11	0	0	
3	6	7	1	0	

$$
\begin{aligned}
x + 2y + z - 3t &= 0\\
2x + 4y + 4z - t &= 0\\
3x + 6y + 7z + t &= 0
\end{aligned}
$$

Rješenje

x	y	z	t	
1	2	1	-3	0
2	4	4	-1	0
3	6	7	1	0 $/ \cdot 1$ $/ \cdot 3$
10	20			
5	10	11	0	0
3	6	7	1	0

$+$ $+$

$$\begin{aligned} x + 2y + z - 3t &= 0 \\ 2x + 4y + 4z - t &= 0 \\ 3x + 6y + 7z + t &= 0 \end{aligned}$$

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
10	20	22			
5	10	11	0	0	
3	6	7	1	0	

$$
\begin{aligned}
x + 2y + z - 3t &= 0\\
2x + 4y + 4z - t &= 0\\
3x + 6y + 7z + t &= 0
\end{aligned}
$$

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
10	20	22	0		
5	10	11	0	0	
3	6	7	1	0	

$$\begin{aligned} x + 2y + z - 3t &= 0 \\ 2x + 4y + 4z - t &= 0 \\ 3x + 6y + 7z + t &= 0 \end{aligned}$$

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1\ /\cdot 3$
10	20	22	0	0	
5	10	11	0	0	
3	6	7	1	0	

$$
\begin{aligned}
x + 2y + z - 3t &= 0\\
2x + 4y + 4z - t &= 0\\
3x + 6y + 7z + t &= 0
\end{aligned}
$$

Rješenje

x	y	z	t	
1	2	1	-3	0
2	4	4	-1	0
3	6	7	1	0 $/\cdot 1$ $/\cdot 3$
10	20	22	0	0
5	10	11	0	0
3	6	7	1	0

$$
\begin{aligned}
x + 2y + z - 3t &= 0\\
2x + 4y + 4z - t &= 0\\
3x + 6y + 7z + t &= 0
\end{aligned}
$$

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1\ /\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	

$$\begin{aligned} x + 2y + z - 3t &= 0 \\ 2x + 4y + 4z - t &= 0 \\ 3x + 6y + 7z + t &= 0 \end{aligned}$$

Rješenje

$$\begin{array}{cccc|cl}
x & y & z & t & & \\
\hline
1 & 2 & 1 & -3 & 0 & \\
2 & 4 & 4 & -1 & 0 & \\
3 & 6 & 7 & 1 & 0 & /\cdot 1 \; /\cdot 3 \\
\hline
10 & 20 & 22 & 0 & 0 & /:2 \\
5 & 10 & 11 & 0 & 0 & \\
3 & 6 & 7 & 1 & 0 & \\
\hline
5 & 10 & 11 & 0 & 0 &
\end{array}$$

$$\begin{aligned}
x + 2y + z - 3t &= 0 \\
2x + 4y + 4z - t &= 0 \\
3x + 6y + 7z + t &= 0
\end{aligned}$$

Rješenje

$$
\begin{aligned}
x + 2y + z - 3t &= 0\\
2x + 4y + 4z - t &= 0\\
3x + 6y + 7z + t &= 0
\end{aligned}
$$

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	

$$\begin{aligned} x + 2y + z - 3t &= 0 \\ 2x + 4y + 4z - t &= 0 \\ 3x + 6y + 7z + t &= 0 \end{aligned}$$

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1 \; /\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	

$+$ $+$

$$\begin{aligned} x + 2y + z - 3t &= 0 \\ 2x + 4y + 4z - t &= 0 \\ 3x + 6y + 7z + t &= 0 \end{aligned}$$

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
10	20	22	0	0	$/ : 2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	

$$
\begin{aligned}
x + 2y + z - 3t &= 0\\
2x + 4y + 4z - t &= 0\\
3x + 6y + 7z + t &= 0
\end{aligned}
$$

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
3	6	7	1	0	

$$\begin{aligned} x+2y+z-3t&=0\\ 2x+4y+4z-t&=0\\ 3x+6y+7z+t&=0 \end{aligned}$$

Rješenje

x	y	z	t		
1	2	1	-3	0	$+$
2	4	4	-1	0	$+$
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
10	20	22	0	0	$/ : 2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
3	6	7	1	0	

$$
\begin{aligned}
x + 2y + z - 3t &= 0\\
2x + 4y + 4z - t &= 0\\
3x + 6y + 7z + t &= 0
\end{aligned}
$$

Rješenje

$$
\begin{aligned}
x + 2y + z - 3t &= 0 \\
2x + 4y + 4z - t &= 0 \\
3x + 6y + 7z + t &= 0
\end{aligned}
$$

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$

10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	

5	10	11	0	0
5	10	11	0	0
3	6	7	1	0

5	10	11	0	0
3	6	7	1	0

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1\ /\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	

$$
\begin{aligned}
x + 2y + z - 3t &= 0\\
2x + 4y + 4z - t &= 0\\
3x + 6y + 7z + t &= 0
\end{aligned}
$$

Rješenje

x	y	z	t		
1	2	1	-3	0	$+$
2	4	4	-1	0	$+$
3	6	7	1	0	$/\cdot 1 \ /\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	$+$

$$
\begin{aligned}
x + 2y + z - 3t &= 0\\
2x + 4y + 4z - t &= 0\\
3x + 6y + 7z + t &= 0
\end{aligned}
$$

Rješenje

x	y	z	t		
1	2	1	-3	0	$+$
2	4	4	-1	0	$+$
3	6	7	1	0	$/\cdot 1 \; /\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	$+$

x	y	z	t	

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	

x	y	z	t	
5	10	11	0	0

Rješenje

x	y	z	t		
1	2	1	-3	0	$+$
2	4	4	-1	0	$+$
3	6	7	1	0	$/\cdot 1 \; /\cdot 3$
10	20	22	0	0	$/: 2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	$+$

x	y	z	t	
5	10	11	0	0
0				

Rješenje

x	y	z	t		
1	2	1	-3	0	$+$
2	4	4	-1	0	$+$
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
10	20	22	0	0	$/ : 2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	$+$

x	y	z	t	
5	10	11	0	0
0	0			

Rješenje

x	y	z	t		
1	2	1	-3	0	$+$
2	4	4	-1	0	$+$
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	$+$

x	y	z	t	
5	10	11	0	0
0	0	$\frac{2}{5}$		

Rješenje

x	y	z	t		
1	2	1	-3	0	$+$
2	4	4	-1	0	$+$
3	6	7	1	0	$/\cdot 1\ /\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	$+$

x	y	z	t	
5	10	11	0	0
0	0	$\frac{2}{5}$	1	

Rješenje

x	y	z	t		
1	2	1	−3	0	+
2	4	4	−1	0	+
3	6	7	1	0	$/\cdot 1\ /\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	+

x	y	z	t	
5	10	11	0	0
0	0	$\frac{2}{5}$	1	0

Rješenje

x	y	z	t		
1	2	1	-3	0	$+$
2	4	4	-1	0	$+$
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	$+$

x	y	z	t	
5	10	11	0	0
0	0	$\frac{2}{5}$	1	0

Rješenje

$$\begin{array}{cccc|cl}
x & y & z & t & & \\
\hline
1 & 2 & 1 & -3 & 0 & \\
2 & 4 & 4 & -1 & 0 & \\
3 & 6 & 7 & 1 & 0 & /\cdot 1 \;/\cdot 3 \\
\hline
10 & 20 & 22 & 0 & 0 & /:2 \\
5 & 10 & 11 & 0 & 0 & \\
3 & 6 & 7 & 1 & 0 & \\
\hline
5 & 10 & 11 & 0 & 0 & \\
5 & 10 & 11 & 0 & 0 & \\
3 & 6 & 7 & 1 & 0 & \\
\hline
5 & 10 & 11 & 0 & 0 & /\cdot \frac{-3}{5} \\
3 & 6 & 7 & 1 & 0 & \\
\hline
 & & & & &
\end{array}$$

$$\begin{array}{cccc|cl}
x & y & z & t & & \\
\hline
5 & 10 & 11 & 0 & 0 & \\
0 & 0 & \frac{2}{5} & 1 & 0 & /\cdot 5 \\
\hline
 & & & & &
\end{array}$$

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	

x	y	z	t		
5	10	11	0	0	
0	0	$\frac{2}{5}$	1	0	$/\cdot 5$
5	10	11	0	0	

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	

x	y	z	t		
5	10	11	0	0	
0	0	$\frac{2}{5}$	1	0	$/\cdot 5$
5	10	11	0	0	
0	0	2	5	0	

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$

10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	

5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	

5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	

x	y	z	t		
5	10	11	0	0	
0	0	$\frac{2}{5}$	1	0	$/\cdot 5$

5	10	11	0	0
0	0	2	5	0

$$5x + 10y + 11z = 0$$

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	

x	y	z	t		
5	10	11	0	0	
0	0	$\frac{2}{5}$	1	0	$/\cdot 5$
5	10	11	0	0	
0	0	2	5	0	

$$
\begin{aligned}
5x + 10y + 11z &= 0 \\
2z + 5t &= 0
\end{aligned}
$$

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	

x	y	z	t		
5	10	11	0	0	
0	0	$\frac{2}{5}$	1	0	$/\cdot 5$
5	10	11	0	0	
0	0	2	5	0	

$$\left.\begin{aligned} 5x + 10y + 11z &= 0 \\ 2z + 5t &= 0 \end{aligned}\right\}$$

Rješenje

x	y	z	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	

x	y	z	t		
5	10	11	0	0	
0	0	$\frac{2}{5}$	1	0	$/\cdot 5$
5	10	11	0	0	
0	0	2	5	0	

$$\left.\begin{aligned} 5x + 10y + 11z &= 0 \\ 2z + 5t &= 0 \end{aligned}\right\}$$

$$\begin{cases} x = \\ y = \\ z = \\ t = \end{cases}$$

Rješenje

x	$\boxed{y}$	$\boxed{z}$	t		
1	2	1	-3	0	$+$
2	4	4	-1	0	$+$
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	$+$

x	$\boxed{y}$	$\boxed{z}$	t		
5	10	11	0	0	
0	0	$\frac{2}{5}$	1	0	$/\cdot 5$
5	10	11	0	0	
0	0	2	5	0	

$$\left.\begin{aligned} 5x + 10y + 11z &= 0 \\ 2z + 5t &= 0 \end{aligned}\right\}$$

$$\begin{cases} x = \\ y = \\ z = \\ t = \end{cases}$$

Rješenje

x	$\boxed{y}$	$\boxed{z}$	t		
1	2	1	-3	0	$+$
2	4	4	-1	0	$+$
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$

10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	

5	10	11	0	0
5	10	11	0	0
3	6	7	1	0

5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	$+$

x	$\boxed{y}$	$\boxed{z}$	t		
5	10	11	0	0	
0	0	$\frac{2}{5}$	1	0	$/\cdot 5$

5	10	11	0	0
0	0	2	5	0

$$\left.\begin{aligned} 5x + 10y + 11z &= 0 \\ 2z + 5t &= 0 \end{aligned}\right\}$$

$$\begin{cases} x = \\ y = u \\ z = \\ t = \end{cases}$$

Rješenje

$$
\begin{array}{cccc|c}
x & \boxed{y} & \boxed{z} & t & \\
\hline
1 & 2 & 1 & -3 & 0 \\
2 & 4 & 4 & -1 & 0 \\
3 & 6 & 7 & 1 & 0 \\
\hline
10 & 20 & 22 & 0 & 0 \\
5 & 10 & 11 & 0 & 0 \\
3 & 6 & 7 & 1 & 0 \\
\hline
5 & 10 & 11 & 0 & 0 \\
5 & 10 & 11 & 0 & 0 \\
3 & 6 & 7 & 1 & 0 \\
\hline
5 & 10 & 11 & 0 & 0 \\
3 & 6 & 7 & 1 & 0 \\
\hline
 & & & &
\end{array}
\begin{array}{l}
\\
\\
+ \\
+ \\
/ \cdot 1 \; / \cdot 3 \\
/ : 2 \\
\\
\\
\\
\\
\\
/ \cdot \frac{-3}{5} \\
+ \\
\\
\end{array}
$$

$$
\begin{array}{cccc|c}
x & \boxed{y} & \boxed{z} & t & \\
\hline
5 & 10 & 11 & 0 & 0 \\
0 & 0 & \frac{2}{5} & 1 & 0 \\
\hline
5 & 10 & 11 & 0 & 0 \\
0 & 0 & 2 & 5 & 0
\end{array}
\quad / \cdot 5
$$

$$
\left.\begin{aligned}
5x + 10y + 11z &= 0 \\
2z + 5t &= 0
\end{aligned}\right\}
$$

$$
\left\{\begin{aligned}
x &= \\
y &= u \\
z &= v \\
t &=
\end{aligned}\right.
$$

Rješenje

x	$\boxed{y}$	$\boxed{z}$	t		
1	2	1	-3	0	$+$
2	4	4	-1	0	$+$
3	6	7	1	0	$/\cdot 1$ $/\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	$+$

x	$\boxed{y}$	$\boxed{z}$	t		
5	10	11	0	0	
0	0	$\frac{2}{5}$	1	0	$/\cdot 5$
5	10	11	0	0	
0	0	2	5	0	

$$\left.\begin{aligned} 5x + 10y + 11z &= 0 \\ 2z + 5t &= 0 \end{aligned}\right\}$$

$$\begin{cases} x = -2u - \frac{11}{5}v \\ y = u \\ z = v \\ t = \end{cases}$$

Rješenje

x	$\boxed{y}$	$\boxed{z}$	t		
1	2	1	-3	0	$+$
2	4	4	-1	0	$+$
3	6	7	1	0	$/\cdot 1\ /\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	$+$

x	$\boxed{y}$	$\boxed{z}$	t		
5	10	11	0	0	
0	0	$\frac{2}{5}$	1	0	$/\cdot 5$
5	10	11	0	0	
0	0	2	5	0	

$$\left.\begin{aligned} 5x + 10y + 11z &= 0 \\ 2z + 5t &= 0 \end{aligned}\right\}$$

$$\begin{cases} x = -2u - \frac{11}{5}v \\ y = u \\ z = v \\ t = -\frac{2}{5}v \end{cases}$$

Rješenje

x	$\boxed{y}$	$\boxed{z}$	t		
1	2	1	-3	0	
2	4	4	-1	0	
3	6	7	1	0	$/\cdot 1\ /\cdot 3$
10	20	22	0	0	$/:2$
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	
5	10	11	0	0	
3	6	7	1	0	
5	10	11	0	0	$/\cdot \frac{-3}{5}$
3	6	7	1	0	

x	$\boxed{y}$	$\boxed{z}$	t		
5	10	11	0	0	
0	0	$\frac{2}{5}$	1	0	$/\cdot 5$
5	10	11	0	0	
0	0	2	5	0	

$$\left.\begin{aligned} 5x + 10y + 11z &= 0 \\ 2z + 5t &= 0 \end{aligned}\right\}$$

$$\begin{cases} x = -2u - \frac{11}{5}v \\ y = u \\ z = v \\ t = -\frac{2}{5}v \end{cases} \qquad u, v \in \mathbb{R}$$

$$\begin{cases} x = -2u - \dfrac{11}{5}v \\ y = u \\ z = v \\ t = -\dfrac{2}{5}v \end{cases}$$

$(x, y, z, t) =$

$$\begin{cases} x = -2u - \dfrac{11}{5}v \\ y = u \\ z = v \\ t = -\dfrac{2}{5}v \end{cases}$$

$$(x, y, z, t) = \Big(-2u - \frac{11}{5}v,$$

$$\begin{cases} x = -2u - \dfrac{11}{5}v \\ y = u \\ z = v \\ t = -\dfrac{2}{5}v \end{cases}$$

$$(x, y, z, t) = \Big(-2u - \frac{11}{5}v,\ u,$$

$$\begin{cases} x = -2u - \dfrac{11}{5}v \\ y = u \\ z = v \\ t = -\dfrac{2}{5}v \end{cases}$$

$$(x, y, z, t) = \left(-2u - \frac{11}{5}v,\ u,\ v,\right.$$

$$\begin{cases} x = -2u - \dfrac{11}{5}v \\ y = u \\ z = v \\ t = -\dfrac{2}{5}v \end{cases}$$

$$(x, y, z, t) = \left(-2u - \frac{11}{5}v,\ u,\ v,\ -\frac{2}{5}v\right)$$

$$\begin{cases} x = -2u - \dfrac{11}{5}v \\ y = u \\ z = v \\ t = -\dfrac{2}{5}v \end{cases}$$

$$(x, y, z, t) = \left(-2u - \frac{11}{5}v,\ u,\ v,\ -\frac{2}{5}v\right) =$$

$$= u \cdot$$

$$\begin{cases} x = -2u - \dfrac{11}{5}v \\ y = u \\ z = v \\ t = -\dfrac{2}{5}v \end{cases}$$

$$(x, y, z, t) = \left(-2u - \frac{11}{5}v,\ u,\ v,\ -\frac{2}{5}v\right) =$$

$$= u \cdot (-2,$$

$$\begin{cases} x = -2u - \dfrac{11}{5}v \\ y = u \\ z = v \\ t = -\dfrac{2}{5}v \end{cases}$$

$$(x, y, z, t) = \left(-2u - \frac{11}{5}v,\ u,\ v,\ -\frac{2}{5}v\right) =$$

$$= u \cdot (-2, 1,$$

$$\boxed{\begin{cases} x = -2u - \dfrac{11}{5}v \\ y = u \\ z = v \\ t = -\dfrac{2}{5}v \end{cases}}$$

$$(x, y, z, t) = \left(-2u - \frac{11}{5}v,\ u,\ v,\ -\frac{2}{5}v\right) =$$

$$= u \cdot (-2, 1, 0,$$

$$\begin{cases} x = -2u - \dfrac{11}{5}v \\ y = u \\ z = v \\ t = -\dfrac{2}{5}v \end{cases}$$

$$(x, y, z, t) = \left(-2u - \frac{11}{5}v,\ u,\ v,\ -\frac{2}{5}v\right) =$$

$$= u \cdot (-2, 1, 0, 0)$$

$$\begin{cases} x = -2u - \frac{11}{5}v \\ y = u \\ z = v \\ t = -\frac{2}{5}v \end{cases}$$

$$(x, y, z, t) = \left(-2u - \frac{11}{5}v,\ u,\ v,\ -\frac{2}{5}v\right) =$$

$$= u \cdot (-2, 1, 0, 0) + v \cdot$$

$$\begin{cases} x = -2u - \frac{11}{5}v \\ y = u \\ z = v \\ t = -\frac{2}{5}v \end{cases}$$

$$(x, y, z, t) = \left(-2u - \frac{11}{5}v,\ u,\ v,\ -\frac{2}{5}v\right) =$$

$$= u \cdot (-2, 1, 0, 0) + v \cdot \left(-\frac{11}{5},\right.$$

$$\begin{cases} x = -2u - \frac{11}{5}v \\ y = u \\ z = v \\ t = -\frac{2}{5}v \end{cases}$$

$$(x, y, z, t) = \left(-2u - \frac{11}{5}v,\ u,\ v,\ -\frac{2}{5}v\right) =$$

$$= u \cdot (-2, 1, 0, 0) + v \cdot \left(-\frac{11}{5}, 0,\right.$$

$$\begin{cases} x = -2u - \dfrac{11}{5}v \\ y = u \\ z = v \\ t = -\dfrac{2}{5}v \end{cases}$$

$$(x, y, z, t) = \left(-2u - \frac{11}{5}v,\ u,\ v,\ -\frac{2}{5}v\right) =$$

$$= u \cdot (-2, 1, 0, 0) + v \cdot \left(-\frac{11}{5}, 0, 1,\right.$$

$$\begin{cases} x = -2u - \dfrac{11}{5}v \\ y = u \\ z = v \\ t = -\dfrac{2}{5}v \end{cases}$$

$$(x, y, z, t) = \left(-2u - \frac{11}{5}v,\ u,\ v,\ -\frac{2}{5}v\right) =$$

$$= u \cdot (-2, 1, 0, 0) + v \cdot \left(-\frac{11}{5}, 0, 1, -\frac{2}{5}\right)$$

$$\begin{cases} x = -2u - \dfrac{11}{5}v \\ y = u \\ z = v \\ t = -\dfrac{2}{5}v \end{cases}$$

$$(x, y, z, t) = \left(-2u - \frac{11}{5}v,\ u,\ v,\ -\frac{2}{5}v\right) =$$

$$= u \cdot (-2, 1, 0, 0) + v \cdot \left(-\frac{11}{5}, 0, 1, -\frac{2}{5}\right)$$

$$\mathcal{B}_R = \left\{(-2, 1, 0, 0),\ \left(-\frac{11}{5}, 0, 1,\ -\frac{2}{5}\right)\right\}$$

$$\begin{cases} x = -2u - \dfrac{11}{5}v \\ y = u \\ z = v \\ t = -\dfrac{2}{5}v \end{cases}$$

$$(x, y, z, t) = \left(-2u - \frac{11}{5}v,\ u,\ v,\ -\frac{2}{5}v\right) =$$

$$= u \cdot (-2, 1, 0, 0) + v \cdot \left(-\frac{11}{5}, 0, 1, -\frac{2}{5}\right)$$

$$\mathcal{B}_R = \left\{(-2, 1, 0, 0),\ \left(-\frac{11}{5}, 0, 1,\ -\frac{2}{5}\right)\right\} \qquad \dim R = 2$$

$$R < \mathbb{R}^4$$

$$\begin{cases} x = -2u - \dfrac{11}{5}v \\ y = u \\ z = v \\ t = -\dfrac{2}{5}v \end{cases}$$

$$(x, y, z, t) = \left(-2u - \frac{11}{5}v,\ u,\ v,\ -\frac{2}{5}v\right) =$$

$$= u \cdot (-2, 1, 0, 0) + v \cdot \left(-\frac{11}{5}, 0, 1, -\frac{2}{5}\right)$$

$$\mathcal{B}_R = \left\{(-2, 1, 0, 0),\ \left(-\frac{11}{5}, 0, 1,\ -\frac{2}{5}\right)\right\} \qquad \dim R = 2$$

$\boxed{\dim \mathbb{R}^4 = 4}$

$$R < \mathbb{R}^4$$

$$\begin{cases} x = -2u - \dfrac{11}{5}v \\ y = u \\ z = v \\ t = -\dfrac{2}{5}v \end{cases}$$

$$(x, y, z, t) = \left(-2u - \frac{11}{5}v,\ u,\ v,\ -\frac{2}{5}v\right) =$$

$$= u \cdot (-2, 1, 0, 0) + v \cdot \left(-\frac{11}{5}, 0, 1, -\frac{2}{5}\right)$$

$$\mathcal{B}_R = \left\{(-2, 1, 0, 0),\ \left(-\frac{11}{5}, 0, 1,\ -\frac{2}{5}\right)\right\} \qquad \dim R = 2$$

$$\begin{bmatrix} -2 & & & \\ 1 & & & \\ 0 & & & \\ 0 & & & \end{bmatrix}$$

$$\begin{bmatrix} -2 & -\frac{11}{5} & & \\ 1 & 0 & & \\ 0 & 1 & & \\ 0 & -\frac{2}{5} & & \end{bmatrix}$$

$$\left[\begin{array}{cc:c} -2 & -\frac{11}{5} & \\ 1 & 0 & \\ 0 & 1 & \\ 0 & -\frac{2}{5} & \end{array}\right]$$

$$\left[\begin{array}{cc:c} -2 & -\frac{11}{5} & 1 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 \end{array}\right]$$

$$\left[\begin{array}{cc:cc} -2 & -\frac{11}{5} & 1 & 0 \\ 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 \end{array}\right]$$

$$\left[\begin{array}{cc:ccc}
-2 & -\frac{11}{5} & 1 & 0 & 0 \\
1 & 0 & 0 & 1 & 0 \\
0 & 1 & 0 & 0 & 1 \\
0 & -\frac{2}{5} & 0 & 0 & 0
\end{array}\right]$$

$$\left[\begin{array}{cc:cccc} -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right]$$

$$
\left[\begin{array}{cc:cccc}
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
$$

$$
\left[\begin{array}{cc:cccc}
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\sim
\left[\begin{array}{cc:cccc}
 & & & & & \\
 & & & & & \\
 & & & & & \\
 & & & & &
\end{array}\right]
$$

$$
\left[\begin{array}{cc:cccc}
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
 & & & & & \\
 & & & & & \\
 & & & & &
\end{array}\right]
$$

$$
\left[\begin{array}{cc:cccc}
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
 & & & & & \\
 & & & & &
\end{array}\right]
$$

$$\left[\begin{array}{cc:cccc} -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ & & & & & \end{array}\right]$$

$$\left[\begin{array}{cc:cccc} -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right]$$

$$\left[\begin{array}{cc:cccc} -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right]$$

$$\left[\begin{array}{cc:cccc} -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \Big/ \cdot 2$$

$$\left[\begin{array}{cc:cccc} -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \begin{array}{l} / \cdot 2 \\ + \\ \\ \\ \end{array}$$

$$\left[\begin{array}{cc|cccc} -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \sim \left[\begin{array}{cc|cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \begin{array}{l} / \cdot 2 \\ + \\ \\ \\ \end{array} \sim$$

$$\sim \left[\begin{array}{c|c} & \\ & \\ & \\ & \end{array}\right]$$

$$
\left[\begin{array}{cc:cccc}
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\sim
\begin{array}{c}
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\end{array}
\begin{array}{l}
/\cdot 2 \\
+ \\
\\
\\
\end{array}
\sim
$$

$$
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
 & & & & & \\
 & & & & & \\
 & & & & &
\end{array}\right]
$$

$$
\left[\begin{array}{cc:cccc}
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\begin{array}{l}
/\cdot 2 \\
+ \\
\\
\\
\end{array}
\sim
$$

$$
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & & & & & \\
 & & & & & \\
 & & & & &
\end{array}\right]
$$

$$\left[\begin{array}{cc:cccc} -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \begin{array}{l} /\cdot 2 \\ + \\ \\ \\ \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -\frac{11}{5} & & & & \\ & & & & & \\ & & & & & \end{array}\right]$$

$$\left[\begin{array}{cc:cccc} -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \begin{array}{l} / \cdot 2 \\ + \\ \\ \\ \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -\frac{11}{5} & 1 & & & \\ & & & & & \\ & & & & & \end{array}\right]$$

$$
\left[\begin{array}{cc|cccc}
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\sim
\left[\begin{array}{cc|cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\begin{array}{l} /\cdot 2 \\ + \\ \\ \\ \end{array}
\sim
$$

$$
\sim
\left[\begin{array}{cc|cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -\frac{11}{5} & 1 & 2 & & \\
 & & & & & \\
 & & & & &
\end{array}\right]
$$

$$
\left[\begin{array}{cc:cccc}
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\begin{array}{l} /\cdot 2 \\ + \\ \\ \\ \end{array}
\sim
$$

$$
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -\frac{11}{5} & 1 & 2 & 0 & \\
 & & & & & \\
 & & & & &
\end{array}\right]
$$

$$\left[\begin{array}{cc:cccc} -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \begin{array}{l} /\cdot 2 \\ + \\ \\ \\ \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -\frac{11}{5} & 1 & 2 & 0 & 0 \\ & & & & & \\ & & & & & \end{array}\right]$$

$$
\left[\begin{array}{cc:cccc}
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\begin{array}{l} /\cdot 2 \\ + \\ \\ \\ \end{array}
\sim
$$

$$
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -\frac{11}{5} & 1 & 2 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
 & & & & &
\end{array}\right]
$$

$$\left[\begin{array}{cc:cccc} -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \begin{array}{l} / \cdot 2 \\ + \\ \\ \\ \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -\frac{11}{5} & 1 & 2 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right]$$

$$\left[\begin{array}{cc:cccc} -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \begin{array}{l} /\cdot 2 \\ + \\ \\ \\ \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -\frac{11}{5} & 1 & 2 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \begin{array}{l} \\ /\cdot 5 \\ \\ \\ \end{array}$$

$$\left[\begin{array}{cc:cccc} -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \begin{array}{l} /\cdot 2 \\ + \\ \\ \\ \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -\frac{11}{5} & 1 & 2 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \begin{array}{l} \\ /\cdot 5 \\ \\ /\cdot 5 \end{array}$$

$$\left[\begin{array}{cc:cccc} -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right]\begin{array}{l} /\cdot 2 \\ + \\ \\ \\ \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -\frac{11}{5} & 1 & 2 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right]\begin{array}{l} \\ /\cdot 5 \\ \\ /\cdot 5 \end{array} \sim \left[\begin{array}{c:c} \quad & \quad \\ \quad & \quad \\ \quad & \quad \end{array}\right]$$

$$
\left[\begin{array}{cc:cccc}
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\begin{array}{l} /\cdot 2 \\ + \\ \\ \\ \end{array}
\sim
$$

$$
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -\frac{11}{5} & 1 & 2 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\begin{array}{l} \\ /\cdot 5 \\ \\ /\cdot 5 \end{array}
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
 & & & & & \\
 & & & & & \\
 & & & & &
\end{array}\right]
$$

$$
\left[\begin{array}{cc:cccc}
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\sim
\begin{array}{l}
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\end{array}
\begin{array}{l}
/\cdot 2 \\
\quad + \\
\\
\\
\end{array}
\sim
$$

$$
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -\frac{11}{5} & 1 & 2 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\begin{array}{l}
\\
/\cdot 5 \\
\\
/\cdot 5
\end{array}
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
 & & & & & \\
 & & & & &
\end{array}\right]
$$

$$
\left[\begin{array}{cc:cccc}
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\begin{array}{l} /\cdot 2 \\ + \\ \\ \\ \end{array}
\sim
$$

$$
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -\frac{11}{5} & 1 & 2 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\begin{array}{l} \\ /\cdot 5 \\ \\ /\cdot 5 \end{array}
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
 & & & & &
\end{array}\right]
$$

$$
\left[\begin{array}{cc:cccc}
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\sim
\begin{array}{c}
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\end{array}
\begin{array}{l}
/\cdot 2 \\
+ \\
\\
\\
\end{array}
\sim
$$

$$
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -\frac{11}{5} & 1 & 2 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\begin{array}{l}
\\
/\cdot 5 \\
\\
/\cdot 5
\end{array}
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -2 & 0 & 0 & 0 & 5
\end{array}\right]
$$

$$
\left[\begin{array}{cc:cccc}
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\begin{matrix} /\cdot 2 \\ + \\ \\ \\ \end{matrix}
\sim
$$

$$
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -\frac{11}{5} & 1 & 2 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
\begin{matrix} \\ /\cdot 5 \\ \\ /\cdot 5 \end{matrix}
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -2 & 0 & 0 & 0 & 5
\end{array}\right]
$$

$$\left[\begin{array}{cc|cccc} -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right] \sim \left[\begin{array}{cc|cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right]\begin{array}{l} /\cdot 2 \\ + \\ \\ \\ \end{array} \sim$$

$$\sim \left[\begin{array}{cc|cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -\frac{11}{5} & 1 & 2 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right]\begin{array}{l} \\ /\cdot 5 \\ \\ /\cdot 5 \end{array} \sim \left[\begin{array}{cc|cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \end{array}\right]$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ & & & & & \\ & & & & & \\ & & & & & \end{array}\right]$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ & & & & & \\ & & & & & \end{array}\right]$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ & & & & & \end{array}\right]$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right]$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right]$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \begin{array}{l} \\ / \cdot 11 \\ \\ \\ \end{array}$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \begin{array}{l} \\ / \cdot 11 \\ + \\ \\ \end{array}$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \begin{array}{l} \\ / \cdot 11 / \cdot 2 \\ + \\ \\ \end{array}$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \begin{array}{l} \\ / \cdot 11 \,/ \cdot 2 \\ + \\ + \end{array}$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \begin{array}{l} \\ /\cdot 11 \; /\cdot 2 \\ \quad + \\ \qquad + \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cccc} & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \end{array}\right]$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \begin{array}{l} \\ /\cdot 11 \; /\cdot 2 \\ \\ \\ \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ & & & & & \\ & & & & & \\ & & & & & \end{array}\right]$$

$$
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -2 & 0 & 0 & 0 & 5
\end{array}\right]
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & -2 & 0 & 0 & 0 & 5
\end{array}\right]
\begin{array}{l}
\\
/\cdot 11 \; /\cdot 2 \\
+ \\
+
\end{array}
\sim
$$

$$
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
 & & & & & \\
 & & & & &
\end{array}\right]
$$

$$
\left[\begin{array}{cc|cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -2 & 0 & 0 & 0 & 5
\end{array}\right]
\sim
\left[\begin{array}{cc|cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & -2 & 0 & 0 & 0 & 5
\end{array}\right]
\begin{array}{l}
\\
/ \cdot 11 \, / \cdot 2 \\
+ \\
+
\end{array}
\sim
$$

$$
\sim
\left[\begin{array}{cc|cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & & & & & \\
 & & & & &
\end{array}\right]
$$

$$\left[\begin{array}{cc|cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc|cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right]\begin{array}{l} \\ /\cdot 11 \; /\cdot 2 \\ + \\ + \end{array} \sim$$

$$\sim \left[\begin{array}{cc|cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & & & & \\ & & & & & \end{array}\right]$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \begin{array}{l} \\ /\cdot 11 \,/\cdot 2 \\ + \\ + \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 5 & & & \\ & & & & & \end{array}\right]$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \begin{array}{l} \\ /\cdot 11 \,/\cdot 2 \\ + \\ + \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 5 & 10 & & \\ & & & & & \end{array}\right]$$

$$
\left[\begin{array}{cc|cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -2 & 0 & 0 & 0 & 5
\end{array}\right]
\sim
\begin{array}{l}
\left[\begin{array}{cc|cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & -2 & 0 & 0 & 0 & 5
\end{array}\right]
\end{array}
\begin{array}{l}
\\
/\cdot 11 \,/\cdot 2 \\
+ \\
+
\end{array}
\sim
$$

$$
\sim
\left[\begin{array}{cc|cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & 0 & 5 & 10 & 11 & \\
 & & & & &
\end{array}\right]
$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \begin{array}{l} \\ /\cdot 11 \, /\cdot 2 \\ \xleftarrow{+} \\ \xleftarrow{+} \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 5 & 10 & 11 & 0 \\ & & & & & \end{array}\right]$$

$$
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -2 & 0 & 0 & 0 & 5
\end{array}\right]
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & -2 & 0 & 0 & 0 & 5
\end{array}\right]
\begin{array}{l}
\\
/\cdot 11 \; /\cdot 2 \\
+ \\
+
\end{array}
\sim
$$

$$
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & 0 & 5 & 10 & 11 & 0 \\
0 & & & & &
\end{array}\right]
$$

$$
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -2 & 0 & 0 & 0 & 5
\end{array}\right]
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & -2 & 0 & 0 & 0 & 5
\end{array}\right]
\begin{array}{l}
\\
/\cdot 11 \,/\cdot 2 \\
\\
\\
\end{array}
\sim
$$

$$
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & 0 & 5 & 10 & 11 & 0 \\
0 & 0 & & & &
\end{array}\right]
$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \begin{array}{l} \\ /\cdot 11 \;/\cdot 2 \\ + \\ + \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 5 & 10 & 11 & 0 \\ 0 & 0 & 0 & & & \end{array}\right]$$

$$
\left[\begin{array}{cc|cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -2 & 0 & 0 & 0 & 5
\end{array}\right]
\sim
\left[\begin{array}{cc|cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & -2 & 0 & 0 & 0 & 5
\end{array}\right]
\begin{array}{l}
\\
/\cdot 11 \, / \cdot 2 \\
\\
\\
\end{array}
\sim
$$

$$
\sim
\left[\begin{array}{cc|cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & 0 & 5 & 10 & 11 & 0 \\
0 & 0 & 0 & 0 & &
\end{array}\right]
$$

$$
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -2 & 0 & 0 & 0 & 5
\end{array}\right]
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & -2 & 0 & 0 & 0 & 5
\end{array}\right]
\begin{array}{l}
\\
/\cdot 11 \; /\cdot 2 \\
+ \\
+
\end{array}
\sim
$$

$$
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & 0 & 5 & 10 & 11 & 0 \\
0 & 0 & 0 & 0 & 2 &
\end{array}\right]
$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \begin{array}{l} \\ /\cdot 11 \,/\cdot 2 \\ + \\ + \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 5 & 10 & 11 & 0 \\ 0 & 0 & 0 & 0 & 2 & 5 \end{array}\right]$$

$$
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -2 & 0 & 0 & 0 & 5
\end{array}\right]
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & -2 & 0 & 0 & 0 & 5
\end{array}\right]
\begin{array}{l}
\\
/\cdot 11 \; /\cdot 2 \\
\quad + \\
\qquad + \\
\end{array}
\sim
$$

$$
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & 0 & 5 & 10 & 11 & 0 \\
0 & 0 & 0 & 0 & 2 & 5
\end{array}\right]
$$

$$
\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \begin{array}{l} \\ /\cdot 11 \,/\cdot 2 \\ + \\ + \end{array} \sim
$$

$$
\sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 5 & 10 & 11 & 0 \\ 0 & 0 & 0 & 0 & 2 & 5 \end{array}\right]
$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \begin{array}{l} \\ /\cdot 11 \;/\cdot 2 \\ + \\ + \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 5 & 10 & 11 & 0 \\ 0 & 0 & 0 & 0 & 2 & 5 \end{array}\right]$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \begin{array}{l} \\ /\cdot 11 \,/\cdot 2 \\ \;+ \\ \;+ \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 5 & 10 & 11 & 0 \\ 0 & 0 & 0 & 0 & 2 & 5 \end{array}\right]$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \begin{array}{l} \\ /\cdot 11 \,/\cdot 2 \\ + \\ + \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 5 & 10 & 11 & 0 \\ 0 & 0 & 0 & 0 & 2 & 5 \end{array}\right]$$

Jedna nadopuna do baze za $\mathbb{R}^4$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \begin{array}{l} \\ /\cdot 11 \,/\cdot 2 \\ + \\ + \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 5 & 10 & 11 & 0 \\ 0 & 0 & 0 & 0 & 2 & 5 \end{array}\right]$$

$$\left[\begin{array}{cc:cccc} -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right]$$

Jedna nadopuna do baze za $\mathbb{R}^4$

$$
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -2 & 0 & 0 & 0 & 5
\end{array}\right]
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -11 & 5 & 10 & 0 & 0 \\
0 & -2 & 0 & 0 & 0 & 5
\end{array}\right]
\begin{array}{l} \\ /\cdot 11 \, /\cdot 2 \\ \\ \\ \end{array}
\sim
$$

$$
\sim
\left[\begin{array}{cc:cccc}
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & 0 & 5 & 10 & 11 & 0 \\
0 & 0 & 0 & 0 & 2 & 5
\end{array}\right]
$$

$$
\left[\begin{array}{cc:cccc}
-2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\
1 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 \\
0 & -\frac{2}{5} & 0 & 0 & 0 & 1
\end{array}\right]
$$

Jedna nadopuna do baze za $\mathbb{R}^4$

$$
\left\{(-2, 1, 0, 0),\ \left(-\frac{11}{5}, 0, 1, -\frac{2}{5}\right),\right.
$$

$$\left[\begin{array}{cc:cccc}1 & 0 & 0 & 1 & 0 & 0\\ 0 & -11 & 5 & 10 & 0 & 0\\ 0 & 1 & 0 & 0 & 1 & 0\\ 0 & -2 & 0 & 0 & 0 & 5\end{array}\right] \sim \left[\begin{array}{cc:cccc}1 & 0 & 0 & 1 & 0 & 0\\ 0 & 1 & 0 & 0 & 1 & 0\\ 0 & -11 & 5 & 10 & 0 & 0\\ 0 & -2 & 0 & 0 & 0 & 5\end{array}\right] \begin{array}{l} \\ /\cdot 11 \,/\cdot 2 \\ + \\ + \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cccc}1 & 0 & 0 & 1 & 0 & 0\\ 0 & 1 & 0 & 0 & 1 & 0\\ 0 & 0 & 5 & 10 & 11 & 0\\ 0 & 0 & 0 & 0 & 2 & 5\end{array}\right]$$

$$\left[\begin{array}{cc:cccc}-2 & -\frac{11}{5} & 1 & 0 & 0 & 0\\ 1 & 0 & 0 & 1 & 0 & 0\\ 0 & 1 & 0 & 0 & 1 & 0\\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1\end{array}\right]$$

Jedna nadopuna do baze za $\mathbb{R}^4$

$$\Big\{(-2,1,0,0),\ \left(-\frac{11}{5},0,1,-\frac{2}{5}\right),\ (1,0,0,0),$$

$$\left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -11 & 5 & 10 & 0 & 0 \\ 0 & -2 & 0 & 0 & 0 & 5 \end{array}\right] \begin{array}{l} \\ /\cdot 11 \, /\cdot 2 \\ + \\ + \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 5 & 10 & 11 & 0 \\ 0 & 0 & 0 & 0 & 2 & 5 \end{array}\right]$$

$$\left[\begin{array}{cc:cccc} -2 & -\frac{11}{5} & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & -\frac{2}{5} & 0 & 0 & 0 & 1 \end{array}\right]$$

Jedna nadopuna do baze za $\mathbb{R}^4$

$$\left\{(-2,1,0,0),\ \left(-\frac{11}{5},0,1,-\frac{2}{5}\right),\ (1,0,0,0),\ (0,0,1,0)\right\}$$

drugi zadatak

Zadatak 2

U $\mathcal{P}_3(t)$ *zadan je skup* $\mathcal{B} = \left\{t + 2,\ t^2,\ t^2 + t\right\}$.

a) *Dokažite da je* $\mathcal{B}$ *baza za* $\mathcal{P}_3(t)$.

b) *Bez korištenja matrice prijelaza pronađite koordinate polinoma* $p(t) = t^2 + 3t - 5$ *u bazi* $\mathcal{B}$.

c) *Pomoću matrice prijelaza pronađite koordinate polinoma* $p(t) = t^2 + 3t - 5$ *u bazi* $\mathcal{B}$.

Rješenje

a) $\mathcal{B} = \left\{t + 2,\ t^2,\ t^2 + t\right\}$

Rješenje

a) $\mathcal{B} = \{t + 2,\ t^2,\ t^2 + t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

Rješenje

a) $\mathcal{B} = \left\{t+2,\ t^2,\ t^2+t\right\}$ $\qquad$ $\mathcal{B}_{\mathsf{kan}} = \left\{1, t, t^2\right\}$

$$
\begin{aligned}
t+2 &\longrightarrow (2,1,0) \\
t^2 &\longrightarrow (0,0,1) \\
t^2+t &
\end{aligned}
$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$
\begin{aligned}
t+2 &\longrightarrow (2,1,0)\\
t^2 &\longrightarrow (0,0,1)\\
t^2+t &\longrightarrow (0,1,1)
\end{aligned}
$$

Rješenje

a) $\mathcal{B} = \left\{ t+2,\ t^2,\ t^2+t \right\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \left\{ 1, t, t^2 \right\}$

$$
\begin{aligned}
t+2 &\longrightarrow (2,1,0) \\
t^2 &\longrightarrow (0,0,1) \\
t^2+t &\longrightarrow (0,1,1)
\end{aligned}
$$

$$
\begin{bmatrix} \quad & \quad & \quad \\ & & \\ & & \end{bmatrix}
$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & & \\ 1 & & \\ 0 & & \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & \\ 1 & 0 & \\ 0 & 1 & \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$\begin{aligned} t+2 &\longrightarrow (2,1,0) \\ t^2 &\longrightarrow (0,0,1) \\ t^2+t &\longrightarrow (0,1,1) \end{aligned}$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} / : 2$$

Rješenje

a) $\mathcal{B} = \left\{t+2,\ t^2,\ t^2+t\right\}$ $\qquad\qquad$ $\mathcal{B}_{\text{kan}} = \left\{1, t, t^2\right\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \begin{matrix} /:2 \\ \\ \\ \end{matrix} \sim \begin{bmatrix} & & \\ & & \\ & & \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \begin{matrix} /:2 \\ \\ \\ \end{matrix} \sim \begin{bmatrix} 1 & 0 & 0 \\ & & \\ & & \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \begin{matrix} /:2 \\ \\ \\ \end{matrix} \sim \begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 1 \\ & & \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \begin{matrix} /:2 \\ \\ \\ \end{matrix} \sim \begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} /:2 \quad \sim \begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \begin{matrix} /:2 \\ \\ \\ \end{matrix} \sim \begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \begin{matrix} /\cdot(-1) \\ \\ \\ \end{matrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\mathsf{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} /:2 \quad \sim \begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} /\cdot(-1) \ +$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} /:2 \quad \sim \begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} / \cdot (-1) \quad + \quad \sim \begin{bmatrix} & & \\ & & \\ & & \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \left\{t+2,\ t^2,\ t^2+t\right\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \left\{1, t, t^2\right\}$

$$\begin{aligned} t+2 &\longrightarrow (2,1,0) \\ t^2 &\longrightarrow (0,0,1) \\ t^2+t &\longrightarrow (0,1,1) \end{aligned}$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} /:2 \quad \sim \begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} /\cdot(-1) \;+ \quad \sim \begin{bmatrix} 1 & 0 & 0 \\ & & \\ & & \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$\begin{aligned} t+2 &\longrightarrow (2,1,0) \\ t^2 &\longrightarrow (0,0,1) \\ t^2+t &\longrightarrow (0,1,1) \end{aligned}$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \begin{matrix} /:2 \\ \\ \\ \end{matrix} \sim \begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \begin{matrix} /\cdot(-1) \\ + \\ \\ \end{matrix} \sim \begin{bmatrix} 1 & 0 & 0 \\ 0 & & \\ & & \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \begin{matrix} /:2 \\ \\ \\ \end{matrix} \sim \begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \begin{matrix} /\cdot(-1) \\ + \\ \\ \end{matrix} \sim \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & \\ & & \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} /:2 \sim \begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \begin{matrix} /\cdot(-1) \\ + \\ \end{matrix} \sim \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 1 \\ & & \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} / : 2 \sim \begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \begin{matrix} / \cdot (-1) \\ + \\ \end{matrix} \sim \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} /:2 \sim \begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} /\cdot(-1) \ + \sim \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} / : 2 \sim \begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} / \cdot (-1) \ + \sim \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \sim \begin{bmatrix} & & \\ & & \\ & & \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} /:2 \sim \begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} /\cdot(-1) \; + \sim \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \sim \begin{bmatrix} 1 & 0 & 0 \\ & & \\ & & \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} / : 2 \sim \begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} / \cdot (-1) \ + \sim \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \sim \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 1 \\ & & \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} /:2 \sim \begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} /\cdot(-1) \quad + \sim \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \sim \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 1 \\ 0 & 0 & 1 \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} / : 2 \sim \begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} / \cdot (-1) \;+ \sim \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \sim \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 1 \\ 0 & 0 & 1 \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} /:2 \sim \begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} / \cdot (-1) \quad + \quad \sim \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \sim \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 1 \\ 0 & 0 & 1 \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} / : 2 \sim \begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} / \cdot (-1) \ + \sim \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \sim \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 1 \\ 0 & 0 & 1 \end{bmatrix}$$

Rješenje

a) $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$\begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} /:2 \sim \begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} /\cdot(-1) \ + \sim \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \sim \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 1 \\ 0 & 0 & 1 \end{bmatrix}$$

$\Longrightarrow$ $\mathcal{B}$ je baza za $\mathcal{P}_3(t)$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \left\{ t+2,\ t^2,\ t^2+t \right\}$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \left\{ t+2,\ t^2,\ t^2+t \right\}$

$$t^2 + 3t - 5 =$$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \left\{t + 2,\ t^2,\ t^2 + t\right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t + 2)$$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \left\{t + 2,\ t^2,\ t^2 + t\right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t + 2) + \alpha_2 \cdot t^2$$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \left\{t + 2,\ t^2,\ t^2 + t\right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t + 2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \left\{t + 2,\ t^2,\ t^2 + t\right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t + 2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$

$$t^2 + 3t - 5 =$$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \left\{t + 2,\ t^2,\ t^2 + t\right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t + 2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2$$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \left\{ t + 2,\ t^2,\ t^2 + t \right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t + 2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$

$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t$$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \left\{ t+2,\ t^2,\ t^2+t \right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$

$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \left\{ t+2,\ t^2,\ t^2+t \right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t) \qquad \alpha_2 + \alpha_3 = 1$$

$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \left\{t + 2,\ t^2,\ t^2 + t\right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t + 2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t) \qquad \alpha_2 + \alpha_3 = 1$$

$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1 \qquad \alpha_1 + \alpha_3 = 3$$

b) $\quad p(t) = t^2 + 3t - 5 \qquad \mathcal{B} = \left\{ t+2,\ t^2,\ t^2+t \right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$

$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}$$

b) $p(t) = t^2 + 3t - 5$ $\quad\quad$ $\mathcal{B} = \left\{t+2,\ t^2,\ t^2+t\right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2+t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

b) $\qquad p(t) = t^2 + 3t - 5 \qquad\qquad \mathcal{B} = \left\{t + 2,\ t^2,\ t^2 + t\right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t + 2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

$$\begin{array}{ccc|c} \alpha_1 & \alpha_2 & \alpha_3 & \\ \hline & & & \end{array}$$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \left\{ t+2,\ t^2,\ t^2+t \right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3	
0	1	1	1

b) $p(t) = t^2 + 3t - 5$ $\qquad \mathcal{B} = \left\{ t+2,\ t^2,\ t^2+t \right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3	
0	1	1	1
1	0	1	3

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \left\{ t+2,\ t^2,\ t^2+t \right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3	
0	1	1	1
1	0	1	3
2	0	0	-5

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \left\{ t+2,\ t^2,\ t^2+t \right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3	
0	1	1	1
1	0	1	3
2	0	0	-5

b) $p(t) = t^2 + 3t - 5$ $\qquad \mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$

$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3	
0	1	1	1
1	0	1	3
2	0	0	-5

b) $\qquad p(t) = t^2 + 3t - 5 \qquad\qquad \mathcal{B} = \left\{t+2,\ t^2,\ t^2+t\right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	
1	0	1	3	$/\cdot(-1)$
2	0	0	-5	

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	$+$
1	0	1	3	$/\cdot(-1)$
2	0	0	-5	

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	$+$
1	0	1	3	$/\cdot(-1)$
2	0	0	-5	
1	0	1	3	

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	$+$
1	0	1	3	$/ \cdot (-1)$
2	0	0	-5	
-1				
1	0	1	3	

b) $p(t) = t^2 + 3t - 5$ $\qquad$ $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$

$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	$+$
1	0	1	3	$/\cdot(-1)$
2	0	0	-5	
-1	1			
1	0	1	3	

b) $p(t) = t^2 + 3t - 5$ $\qquad$ $\mathcal{B} = \left\{t+2,\ t^2,\ t^2+t\right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

$$\begin{array}{ccc|cl} \alpha_1 & \alpha_2 & \alpha_3 & & \\ \hline 0 & 1 & 1 & 1 & \overset{+}{\longleftarrow} \\ 1 & 0 & 1 & 3 & / \cdot (-1) \\ 2 & 0 & 0 & -5 & \\ \hline -1 & 1 & 0 & & \\ 1 & 0 & 1 & 3 & \\ & & & & \end{array}$$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	$+$
1	0	1	3	$/ \cdot (-1)$
2	0	0	-5	
-1	1	0	-2	
1	0	1	3	

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \left\{t+2,\ t^2,\ t^2+t\right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$

$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	+
1	0	1	3	$/\cdot(-1)$
2	0	0	-5	
-1	1	0	-2	
1	0	1	3	
2	0	0	-5	

b) $p(t) = t^2 + 3t - 5$ $\qquad$ $\mathcal{B} = \left\{t+2,\ t^2,\ t^2+t\right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

$$\begin{array}{ccc|c}
\alpha_1 & \alpha_2 & \alpha_3 & \\
\hline
0 & 1 & 1 & 1 \\
1 & 0 & 1 & 3 \\
2 & 0 & 0 & -5 \\
\hline
-1 & 1 & 0 & -2 \\
1 & 0 & 1 & 3 \\
2 & 0 & 0 & -5 \\
\hline
 & & &
\end{array}
\quad \begin{array}{l} \xleftarrow{+} \\ / \cdot (-1) \\ \\ \end{array}$$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	$+$
1	0	1	3	$/ \cdot (-1)$
2	0	0	-5	
-1	1	0	-2	
1	0	1	3	
2	0	0	-5	$/ : 2$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	$+$
1	0	1	3	$/\cdot(-1)$
2	0	0	-5	
-1	1	0	-2	
1	0	1	3	
2	0	0	-5	$/:2$

α_1	α_2	α_3	

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

$$\begin{array}{ccc|cl} \alpha_1 & \alpha_2 & \alpha_3 & & \\ \hline 0 & 1 & 1 & 1 & \xleftarrow{+} \\ 1 & 0 & 1 & 3 & / \cdot (-1) \\ 2 & 0 & 0 & -5 & \\ \hline -1 & 1 & 0 & -2 & \\ 1 & 0 & 1 & 3 & \\ 2 & 0 & 0 & -5 & / : 2 \\ \hline & & & & \end{array}$$

$$\begin{array}{ccc|c} \alpha_1 & \alpha_2 & \alpha_3 & \\ \hline -1 & 1 & 0 & -2 \end{array}$$

b) $p(t) = t^2 + 3t - 5$ $\qquad \mathcal{B} = \{t + 2,\ t^2,\ t^2 + t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$

$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	+
1	0	1	3	$/\cdot(-1)$
2	0	0	-5	
-1	1	0	-2	
1	0	1	3	
2	0	0	-5	$/:2$

α_1	α_2	α_3	
-1	1	0	-2
1	0	1	3

b) $p(t) = t^2 + 3t - 5$ $\qquad \mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	+
1	0	1	3	$/ \cdot (-1)$
2	0	0	-5	
-1	1	0	-2	
1	0	1	3	
2	0	0	-5	$/ : 2$

α_1	α_2	α_3	
-1	1	0	-2
1	0	1	3
1	0	0	$-\frac{5}{2}$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	$+$
1	0	1	3	$/\cdot(-1)$
2	0	0	-5	
-1	1	0	-2	
1	0	1	3	
2	0	0	-5	$/:2$

α_1	α_2	α_3	
-1	1	0	-2
1	0	1	3
1	0	0	$-\frac{5}{2}$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	$+$
1	0	1	3	$/ \cdot (-1)$
2	0	0	-5	
-1	1	0	-2	
1	0	1	3	
2	0	0	-5	$/ : 2$

α_1	α_2	α_3	
-1	1	0	-2
1	0	1	3
1	0	0	$-\frac{5}{2}$

b) $p(t) = t^2 + 3t - 5$ $\qquad\qquad \mathcal{B} = \left\{t+2,\ t^2,\ t^2+t\right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$

$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

$$\begin{array}{ccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & & \\
\hline
0 & 1 & 1 & 1 & \xleftarrow{+} \\
1 & 0 & 1 & 3 & /\cdot(-1) \\
2 & 0 & 0 & -5 & \\
\hline
-1 & 1 & 0 & -2 & \\
1 & 0 & 1 & 3 & \\
2 & 0 & 0 & -5 & /:2 \\
\hline
 & & & &
\end{array}
\qquad
\begin{array}{ccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & & \\
\hline
-1 & 1 & 0 & -2 & \\
1 & 0 & 1 & 3 & \\
1 & 0 & 0 & -\frac{5}{2} & /\cdot(-1) \\
\hline
 & & & &
\end{array}$$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \left\{t+2,\ t^2,\ t^2+t\right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	$+$
1	0	1	3	$/\cdot(-1)$
2	0	0	-5	
-1	1	0	-2	
1	0	1	3	
2	0	0	-5	$/:2$

α_1	α_2	α_3		
-1	1	0	-2	
1	0	1	3	$+$
1	0	0	$-\frac{5}{2}$	$/\cdot(-1)$

b) $p(t) = t^2 + 3t - 5$ $\qquad\qquad$ $\mathcal{B} = \left\{t + 2,\ t^2,\ t^2 + t\right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	$+$
1	0	1	3	$/\cdot(-1)$
2	0	0	-5	
-1	1	0	-2	
1	0	1	3	
2	0	0	-5	$/:2$

α_1	α_2	α_3		
-1	1	0	-2	
1	0	1	3	$+$
1	0	0	$-\frac{5}{2}$	$/\cdot(-1)$ $/\cdot 1$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	$+$
1	0	1	3	$/\cdot(-1)$
2	0	0	-5	
-1	1	0	-2	
1	0	1	3	
2	0	0	-5	$/:2$

α_1	α_2	α_3		
-1	1	0	-2	$+$
1	0	1	3	$+$
1	0	0	$-\frac{5}{2}$	$/\cdot(-1)$ $/\cdot 1$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	$+$
1	0	1	3	$/ \cdot (-1)$
2	0	0	-5	
-1	1	0	-2	
1	0	1	3	
2	0	0	-5	$/ : 2$

α_1	α_2	α_3		
-1	1	0	-2	$+$
1	0	1	3	$+$
1	0	0	$-\frac{5}{2}$	$/ \cdot (-1)$ $/ \cdot 1$
1	0	0	$-\frac{5}{2}$	

b) $\quad p(t) = t^2 + 3t - 5 \qquad\qquad \mathcal{B} = \left\{t+2,\ t^2,\ t^2+t\right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

$$\begin{array}{ccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & & \\
\hline
0 & 1 & 1 & 1 & \\
1 & 0 & 1 & 3 & /\cdot(-1) \\
2 & 0 & 0 & -5 & \\
\hline
-1 & 1 & 0 & -2 & \\
1 & 0 & 1 & 3 & \\
2 & 0 & 0 & -5 & /:2 \\
\hline
 & & & &
\end{array}
\qquad
\begin{array}{ccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & & \\
\hline
-1 & 1 & 0 & -2 & \\
1 & 0 & 1 & 3 & \\
1 & 0 & 0 & -\frac{5}{2} & /\cdot(-1)\ /\cdot 1 \\
\hline
 & & & & \\
0 & & & & \\
1 & 0 & 0 & -\frac{5}{2} &
\end{array}$$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	$+$
1	0	1	3	$/ \cdot (-1)$
2	0	0	-5	
-1	1	0	-2	
1	0	1	3	
2	0	0	-5	$/ : 2$

α_1	α_2	α_3		
-1	1	0	-2	$+$
1	0	1	3	$+$
1	0	0	$-\frac{5}{2}$	$/ \cdot (-1)$ $/ \cdot 1$
0	0			
1	0	0	$-\frac{5}{2}$	

b) $\quad p(t) = t^2 + 3t - 5 \qquad \mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

$$\begin{array}{ccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & & \\
\hline
0 & 1 & 1 & 1 & \\
1 & 0 & 1 & 3 & /\cdot(-1) \\
2 & 0 & 0 & -5 & \\
\hline
-1 & 1 & 0 & -2 & \\
1 & 0 & 1 & 3 & \\
2 & 0 & 0 & -5 & /:2 \\
\hline
 & & & &
\end{array}$$

$$\begin{array}{ccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & & \\
\hline
-1 & 1 & 0 & -2 & \\
1 & 0 & 1 & 3 & \\
1 & 0 & 0 & -\frac{5}{2} & /\cdot(-1) \quad /\cdot 1 \\
\hline
 & & & & \\
0 & 0 & 1 & & \\
1 & 0 & 0 & -\frac{5}{2} &
\end{array}$$

b) $p(t) = t^2 + 3t - 5$ $\qquad \mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	+
1	0	1	3	$/ \cdot (-1)$
2	0	0	-5	
-1	1	0	-2	
1	0	1	3	
2	0	0	-5	$/ : 2$

α_1	α_2	α_3		
-1	1	0	-2	+
1	0	1	3	+
1	0	0	$-\frac{5}{2}$	$/ \cdot (-1)$ $/ \cdot 1$
0	0	1	$\frac{11}{2}$	
1	0	0	$-\frac{5}{2}$	

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	+
1	0	1	3	$/\cdot(-1)$
2	0	0	-5	
-1	1	0	-2	
1	0	1	3	
2	0	0	-5	$/:2$

α_1	α_2	α_3			
-1	1	0	-2		+
1	0	1	3	+	
1	0	0	$-\frac{5}{2}$	$/\cdot(-1)$	$/\cdot 1$
0					
0	0	1	$\frac{11}{2}$		
1	0	0	$-\frac{5}{2}$		

b) $\quad p(t) = t^2 + 3t - 5 \qquad \mathcal{B} = \left\{ t+2,\ t^2,\ t^2+t \right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

$$\begin{array}{ccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & & \\
\hline
0 & 1 & 1 & 1 & \xleftarrow{+} \\
1 & 0 & 1 & 3 & / \cdot (-1) \\
2 & 0 & 0 & -5 & \\
\hline
-1 & 1 & 0 & -2 & \\
1 & 0 & 1 & 3 & \\
2 & 0 & 0 & -5 & / : 2 \\
\hline
 & & & &
\end{array}
\qquad
\begin{array}{ccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & & \\
\hline
-1 & 1 & 0 & -2 & \xleftarrow{+} \\
1 & 0 & 1 & 3 & \xleftarrow{+} \\
1 & 0 & 0 & -\frac{5}{2} & / \cdot (-1) \quad / \cdot 1 \\
\hline
0 & 1 & & & \\
0 & 0 & 1 & \frac{11}{2} & \\
1 & 0 & 0 & -\frac{5}{2} &
\end{array}$$

b) $p(t) = t^2 + 3t - 5$ $\quad\quad \mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	$+$
1	0	1	3	$/ \cdot (-1)$
2	0	0	-5	
-1	1	0	-2	
1	0	1	3	
2	0	0	-5	$/ : 2$

α_1	α_2	α_3		
-1	1	0	-2	$+$
1	0	1	3	$+$
1	0	0	$-\frac{5}{2}$	$/ \cdot (-1)$ $/ \cdot 1$
0	1	0		
0	0	1	$\frac{11}{2}$	
1	0	0	$-\frac{5}{2}$	

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	+
1	0	1	3	$/\cdot(-1)$
2	0	0	-5	
-1	1	0	-2	
1	0	1	3	
2	0	0	-5	$/:2$

α_1	α_2	α_3		
-1	1	0	-2	+
1	0	1	3	+
1	0	0	$-\frac{5}{2}$	$/\cdot(-1)$ $/\cdot 1$
0	1	0	$-\frac{9}{2}$	
0	0	1	$\frac{11}{2}$	
1	0	0	$-\frac{5}{2}$	

b) $\qquad p(t) = t^2 + 3t - 5 \qquad\qquad \mathcal{B} = \left\{ t+2,\ t^2,\ t^2+t \right\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$

$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

$$\begin{array}{ccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & & \\
\hline
0 & 1 & 1 & 1 & + \\
1 & 0 & 1 & 3 & /\cdot(-1) \\
2 & 0 & 0 & -5 & \\
\hline
-1 & 1 & 0 & -2 & \\
1 & 0 & 1 & 3 & \\
2 & 0 & 0 & -5 & /:2 \\
\hline
\end{array}
\qquad
\begin{array}{ccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & & \\
\hline
-1 & 1 & 0 & -2 & + \\
1 & 0 & 1 & 3 & + \\
1 & 0 & 0 & -\frac{5}{2} & /\cdot(-1) \ /\cdot 1 \\
\hline
0 & 1 & 0 & -\frac{9}{2} & \\
0 & 0 & 1 & \frac{11}{2} & \\
1 & 0 & 0 & -\frac{5}{2} & \\
\end{array}$$

$$\alpha_2 = -\frac{9}{2}$$

b) $p(t) = t^2 + 3t - 5$ $\qquad \mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	$+$
1	0	1	3	$/\cdot(-1)$
2	0	0	-5	
-1	1	0	-2	
1	0	1	3	
2	0	0	-5	$/ : 2$

α_1	α_2	α_3		
-1	1	0	-2	$+$
1	0	1	3	$+$
1	0	0	$-\frac{5}{2}$	$/\cdot(-1)$ $/\cdot 1$
0	1	0	$-\frac{9}{2}$	
0	0	1	$\frac{11}{2}$	
1	0	0	$-\frac{5}{2}$	

$\alpha_2 = -\frac{9}{2}$ $\qquad \alpha_3 = \frac{11}{2}$

b) $p(t) = t^2 + 3t - 5$ $\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$$t^2 + 3t - 5 = \alpha_1 \cdot (t+2) + \alpha_2 \cdot t^2 + \alpha_3 \cdot (t^2 + t)$$
$$t^2 + 3t - 5 = (\alpha_2 + \alpha_3)t^2 + (\alpha_1 + \alpha_3)t + 2\alpha_1$$

$$\left.\begin{aligned} \alpha_2 + \alpha_3 &= 1 \\ \alpha_1 + \alpha_3 &= 3 \\ 2\alpha_1 &= -5 \end{aligned}\right\}$$

α_1	α_2	α_3		
0	1	1	1	$+$
1	0	1	3	$/ \cdot (-1)$
2	0	0	-5	
-1	1	0	-2	
1	0	1	3	
2	0	0	-5	$/ : 2$

α_1	α_2	α_3		
-1	1	0	-2	$+$
1	0	1	3	$+$
1	0	0	$-\frac{5}{2}$	$/ \cdot (-1)$ $/ \cdot 1$
0	1	0	$-\frac{9}{2}$	
0	0	1	$\frac{11}{2}$	
1	0	0	$-\frac{5}{2}$	

$\alpha_2 = -\frac{9}{2}$ $\alpha_3 = \frac{11}{2}$ $\alpha_1 = -\frac{5}{2}$

c) $p(t) = t^2 + 3t - 5$

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}$$

$\mathcal{B} = \{t + 2,\ t^2,\ t^2 + t\}$

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}$$

c) $p(t) = t^2 + 3t - 5$

$\mathcal{B} = \{t + 2,\ t^2,\ t^2 + t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

c) $p(t) = t^2 + 3t - 5$

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}$$

$\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

c) $p(t) = t^2 + 3t - 5$

$$\boxed{X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}}$$

$\mathcal{B} = \{t + 2,\ t^2,\ t^2 + t\}$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

c) $p(t) = t^2 + 3t - 5$

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}$$

$\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

$$T = \begin{bmatrix} & & \\ & & \\ & & \end{bmatrix}$$

c) $p(t) = t^2 + 3t - 5$

$$\boxed{X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}}$$

$\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$t + 2 \longrightarrow$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

$$T = \begin{bmatrix} \quad & \quad & \quad \\ & & \\ & & \end{bmatrix}$$

c) $p(t) = t^2 + 3t - 5$

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}$$

$$\mathcal{B} = \{t+2,\ t^2,\ t^2+t\} \qquad \mathcal{B}_{\text{kan}} = \{1, t, t^2\}$$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$$t+2 \longrightarrow (2, 1, 0)$$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

$$T = \begin{bmatrix} \quad & \quad & \quad \\ & & \\ & & \end{bmatrix}$$

c) $p(t) = t^2 + 3t - 5$

$$\boxed{X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}}$$

$\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$

$\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$$t + 2 \longrightarrow (2, 1, 0)$$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

$$T = \begin{bmatrix} 2 & & \\ 1 & & \\ 0 & & \end{bmatrix}$$

c) $p(t) = t^2 + 3t - 5$

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}$$

$$\mathcal{B} = \{t+2,\ t^2,\ t^2+t\} \qquad \mathcal{B}_{\text{kan}} = \{1, t, t^2\}$$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow$$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

$$T = \begin{bmatrix} 2 & & \\ 1 & & \\ 0 & & \end{bmatrix}$$

c) $p(t) = t^2 + 3t - 5$

$$\boxed{X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}}$$

$$\mathcal{B} = \{t+2,\ t^2,\ t^2+t\} \qquad \mathcal{B}_{\text{kan}} = \{1, t, t^2\}$$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

$$T = \begin{bmatrix} 2 & & \\ 1 & & \\ 0 & & \end{bmatrix}$$

c) $p(t) = t^2 + 3t - 5$

$$\boxed{X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}}$$

$\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

$$T = \begin{bmatrix} 2 & 0 & \\ 1 & 0 & \\ 0 & 1 & \end{bmatrix}$$

c) $p(t) = t^2 + 3t - 5$

$$\boxed{X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}}$$

$\mathcal{B} = \{t + 2,\ t^2,\ t^2 + t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$$t + 2 \longrightarrow (2, 1, 0)$$

$$t^2 \longrightarrow (0, 0, 1)$$

$$t^2 + t \longrightarrow$$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

$$T = \begin{bmatrix} 2 & 0 & \\ 1 & 0 & \\ 0 & 1 & \end{bmatrix}$$

c) $p(t) = t^2 + 3t - 5$

$$\boxed{X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}}$$

$$\mathcal{B} = \{t+2,\ t^2,\ t^2+t\} \qquad \mathcal{B}_{\text{kan}} = \{1, t, t^2\}$$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

$$T = \begin{bmatrix} 2 & 0 & \\ 1 & 0 & \\ 0 & 1 & \end{bmatrix}$$

c) $p(t) = t^2 + 3t - 5$

$$\boxed{X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}}$$

$\mathcal{B} = \{t + 2,\ t^2,\ t^2 + t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$$t + 2 \longrightarrow (2, 1, 0)$$

$$t^2 \longrightarrow (0, 0, 1)$$

$$t^2 + t \longrightarrow (0, 1, 1)$$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

c) $p(t) = t^2 + 3t - 5$

$$\boxed{X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}}$$

$\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$X_{\mathcal{B}_{\text{kan}}} = T_{\mathcal{B}_{\text{kan}} \to \mathcal{B}} X_{\mathcal{B}}$$

c) $p(t) = t^2 + 3t - 5$

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}$$

$\mathcal{B} = \{t+2,\ t^2,\ t^2+t\}$ $\qquad$ $\mathcal{B}_{\text{kan}} = \{1, t, t^2\}$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$X_{\mathcal{B}_{\text{kan}}} = T_{\mathcal{B}_{\text{kan}} \to \mathcal{B}} X_{\mathcal{B}} \rightsquigarrow X_{\mathcal{B}} = T^{-1} X_{\mathcal{B}_{\text{kan}}}$$

c) $p(t) = t^2 + 3t - 5$

$$\boxed{X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}}$$

$$\mathcal{B} = \{t+2,\ t^2,\ t^2+t\} \qquad \mathcal{B}_{\text{kan}} = \{1, t, t^2\}$$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$X_{\mathcal{B}_{\text{kan}}} = T_{\mathcal{B}_{\text{kan}} \to \mathcal{B}} X_{\mathcal{B}} \rightsquigarrow X_{\mathcal{B}} = T^{-1} X_{\mathcal{B}_{\text{kan}}}$$

$$\mathcal{B} \xrightarrow{T^{-1}} \mathcal{B}_{\text{kan}}$$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

2	0	0	

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

2	0	0	
1	0	1	

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

2	0	0
1	0	1
0	1	1

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

2	0	0	1	0	0
1	0	1			
0	1	1			

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

2	0	0	1	0	0
1	0	1	0	1	0
0	1	1			

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

2	0	0	1	0	0
1	0	1	0	1	0
0	1	1	0	0	1

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

2	0	0	1	0	0
1	0	1	0	1	0
0	1	1	0	0	1

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$\left[\begin{array}{ccc|ccc} 2 & 0 & 0 & 1 & 0 & 0 \\ 1 & 0 & 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 & 0 & 1 \end{array}\right]$$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$
\left[\begin{array}{ccc|ccc}
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0
\end{array}\right]
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

2	0	0	1	0	0
1	0	1	0	1	0
0	1	1	0	0	1
1	0	1	0	1	0
2	0	0	1	0	0

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$
\begin{array}{ccc|ccc}
\hline
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
2 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 1 & 0 & 0 & 1
\end{array}
$$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

2	0	0	1	0	0
1	0	1	0	1	0
0	1	1	0	0	1
1	0	1	0	1	0
2	0	0	1	0	0
0	1	1	0	0	1

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

2	0	0	1	0	0
1	0	1	0	1	0
0	1	1	0	0	1
1	0	1	0	1	0
2	0	0	1	0	0
0	1	1	0	0	1

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$
\begin{array}{ccc|ccc}
\hline
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
2 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
\end{array}
\quad /\cdot(-2)
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

2	0	0	1	0	0	
1	0	1	0	1	0	
0	1	1	0	0	1	
1	0	1	0	1	0	$/\cdot(-2)$
2	0	0	1	0	0	$+$
0	1	1	0	0	1	

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$
\begin{array}{ccc|ccc l}
\hline
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 &
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc l}
\hline
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & & & & & & \\
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc l}
 & & & & & & \\
\hline
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 0 & & & & &
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc l}
\hline
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & \quad + \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 0 & -2 & & & &
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc}
\hline
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
2 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 0 & -2 & 1 & & \\
\end{array}
\quad
\begin{array}{l}
\\ \\ \\ \\
/\cdot(-2) \\
+ \\
\\ \\ \\
\end{array}
$$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$
\begin{array}{ccc|ccc l}
\hline
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 0 & -2 & 1 & -2 & & \\
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc}
\hline
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \quad / \cdot (-2) \\
2 & 0 & 0 & 1 & 0 & 0 \quad + \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 0 & -2 & 1 & -2 & 0
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc}
\hline
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
2 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 0 & -2 & 1 & -2 & 0 \\
0 & 1 & 1 & 0 & 0 & 1
\end{array}
$$

$/\cdot(-2)$

$+$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$
\begin{array}{ccc|ccc}
\hline
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
2 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 0 & -2 & 1 & -2 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
\end{array}
$$

$/\cdot(-2)$

$+$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$
\begin{array}{ccc|ccc l}
\hline
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 0 & -2 & 1 & -2 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
\end{array}
$$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$
\left[\begin{array}{ccc|ccc}
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
2 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 0 & -2 & 1 & -2 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0
\end{array}\right]
\quad
\begin{array}{l}
\\ \\ \\ /\cdot(-2) \\ + \\ \\ \\ \\ \\ \\
\end{array}
$$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$
\begin{array}{ccc|ccc}
\hline
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
2 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 0 & -2 & 1 & -2 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1
\end{array}
\qquad
\begin{array}{l}
\\ \\ \\ \\
/\cdot(-2) \\
+ \\
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc}
 & & & & & \\
\hline
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
2 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 0 & -2 & 1 & -2 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
0 & 0 & -2 & 1 & -2 & 0
\end{array}
$$

$/ \cdot (-2)$

$+$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc l}
\hline
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 0 & -2 & 1 & -2 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
0 & 0 & -2 & 1 & -2 & 0 & \\
\hline
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc l}
\hline
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 0 & -2 & 1 & -2 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
0 & 0 & -2 & 1 & -2 & 0 & /:(-2) \\
\hline
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

2	0	0	1	0	0
1	0	1	0	1	0
0	1	1	0	0	1
1	0	1	0	1	0 $/\cdot(-2)$
2	0	0	1	0	0 $+$
0	1	1	0	0	1
1	0	1	0	1	0
0	0	-2	1	-2	0
0	1	1	0	0	1
1	0	1	0	1	0
0	1	1	0	0	1
0	0	-2	1	-2	0 $/:(-2)$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$
\begin{array}{ccc|ccc}
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
2 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 0 & -2 & 1 & -2 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
0 & 0 & -2 & 1 & -2 & 0 \\
\hline
\end{array}
\qquad
\begin{array}{l}
\\ \\ \\
/\cdot(-2) \\
+ \\
\\ \\ \\ \\ \\ \\
/:(-2)
\end{array}
$$

$$
\begin{array}{ccc|ccc}
1 & 0 & 1 & 0 & 1 & 0
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc l}
\hline
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 0 & -2 & 1 & -2 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
0 & 0 & -2 & 1 & -2 & 0 & /:(-2) \\
\hline
\end{array}
$$

$$
\begin{array}{ccc|ccc}
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc}
\hline
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
2 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 0 & -2 & 1 & -2 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
0 & 0 & -2 & 1 & -2 & 0 \\
\hline
\end{array}
\begin{array}{l}
\\ \\ \\ \\
/\cdot(-2) \\
\quad + \\
\\ \\ \\ \\ \\ \\
/:(-2) \\
\end{array}
$$

$$
\begin{array}{ccc|ccc}
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 \\
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc l}
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 0 & -2 & 1 & -2 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
0 & 0 & -2 & 1 & -2 & 0 & /:(-2) \\
\hline
\end{array}
$$

$$
\begin{array}{ccc|ccc}
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 \\
\hline
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc}
\hline
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
2 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 0 & -2 & 1 & -2 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
0 & 0 & -2 & 1 & -2 & 0 \\
\hline
\end{array}
\qquad
\begin{array}{l}
\\ \\ \\
/\cdot(-2) \\
+ \\
\\ \\ \\ \\ \\ \\
/:(-2)
\end{array}
$$

$$
\begin{array}{ccc|ccc}
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 \\
\hline
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc}
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
2 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 0 & -2 & 1 & -2 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
0 & 0 & -2 & 1 & -2 & 0
\end{array}
\begin{array}{l}
\\ \\ \\
/\cdot(-2) \\
+ \\
\\ \\ \\ \\ \\ \\
/:(-2)
\end{array}
$$

$$
\begin{array}{ccc|ccc}
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0
\end{array}
\begin{array}{l}
\\ \\
/\cdot(-1)
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc|l}
\hline
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 0 & -2 & 1 & -2 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
0 & 0 & -2 & 1 & -2 & 0 & /:(-2) \\
\hline
\end{array}
$$

$$
\begin{array}{ccc|ccc|l}
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & + \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & /\cdot(-1) \\
\hline
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc}
\hline
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 0 & -2 & 1 & -2 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
0 & 0 & -2 & 1 & -2 & 0 & /:(-2) \\
\hline
\end{array}
$$

$$
\begin{array}{ccc|ccc}
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 & + \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & /\cdot(-1) /\cdot(-1) \\
\hline
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$\begin{array}{ccc|ccc}
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 0 & -2 & 1 & -2 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
0 & 0 & -2 & 1 & -2 & 0 & /:(-2)
\end{array}$$

$$\begin{array}{ccc|ccc}
1 & 0 & 1 & 0 & 1 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & + \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & /\cdot(-1)/\cdot(-1)
\end{array}$$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$
\begin{array}{ccc|ccc l}
\hline
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 0 & -2 & 1 & -2 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
0 & 0 & -2 & 1 & -2 & 0 & /:(-2) \\
\hline
\end{array}
$$

$$
\begin{array}{ccc|ccc l}
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & /\cdot(-1)/\cdot(-1) \\
\hline
 & & & & & & \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & \\
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc l}
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 0 & -2 & 1 & -2 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
0 & 0 & -2 & 1 & -2 & 0 & /:(-2)
\end{array}
$$

$$
\begin{array}{ccc|ccc l}
1 & 0 & 1 & 0 & 1 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & + \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & /\cdot(-1)/\cdot(-1) \\
\hline
 & & & & & & \\
0 & & & & & & \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 &
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc|l}
\hline
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 0 & -2 & 1 & -2 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
0 & 0 & -2 & 1 & -2 & 0 & /:(-2) \\
\hline
\end{array}
$$

$$
\begin{array}{ccc|ccc|l}
\hline
1 & 0 & 1 & 0 & 1 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & + \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & /\cdot(-1)/\cdot(-1) \\
\hline
\end{array}
$$

$$
\begin{array}{ccc|ccc}
 & & & & & \\
0 & 1 & & & & \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 \\
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc}
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 0 & -2 & 1 & -2 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
0 & 0 & -2 & 1 & -2 & 0 & /:(-2) \\
\hline
\end{array}
$$

$$
\begin{array}{ccc|ccc}
1 & 0 & 1 & 0 & 1 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & + \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & /\cdot(-1)/\cdot(-1) \\
\hline
 & & & & & \\
0 & 1 & 0 & & & \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 \\
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc}
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
2 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 0 & -2 & 1 & -2 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
0 & 0 & -2 & 1 & -2 & 0
\end{array}
\begin{array}{l}
\\ \\ \\
/\cdot(-2) \\
+ \\
\\ \\ \\ \\ \\ \\
/:(-2)
\end{array}
$$

$$
\begin{array}{ccc|ccc}
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 \\
\hline
 & & & & & \\
0 & 1 & 0 & \frac{1}{2} & & \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0
\end{array}
\begin{array}{l}
+ \\
+ \\
/\cdot(-1)/\cdot(-1) \\
\\ \\ \\
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$\begin{array}{ccc|ccc l}
\hline
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 0 & -2 & 1 & -2 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
0 & 0 & -2 & 1 & -2 & 0 & /:(-2) \\
\hline
\end{array}$$

$$\begin{array}{ccc|ccc l}
\hline
1 & 0 & 1 & 0 & 1 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & + \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & /\cdot(-1)/\cdot(-1) \\
\hline
 & & & & & & \\
0 & 1 & 0 & \frac{1}{2} & -1 & & \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & \\
\end{array}$$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$
\begin{array}{ccc|ccc}
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1
\end{array}
$$

$$
\begin{array}{ccc|cccl}
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 &
\end{array}
$$

$$
\begin{array}{ccc|ccc}
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 0 & -2 & 1 & -2 & 0 \\
0 & 1 & 1 & 0 & 0 & 1
\end{array}
$$

$$
\begin{array}{ccc|cccl}
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
0 & 0 & -2 & 1 & -2 & 0 & /:(-2)
\end{array}
$$

$$
\begin{array}{ccc|ccccc}
1 & 0 & 1 & 0 & 1 & 0 & & + \\
0 & 1 & 1 & 0 & 0 & 1 & + & \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & /\cdot(-1) & /\cdot(-1)
\end{array}
$$

$$
\begin{array}{ccc|ccc}
 & & & & & \\
0 & 1 & 0 & \frac{1}{2} & -1 & 1 \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc l}
\hline
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 0 & -2 & 1 & -2 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
0 & 0 & -2 & 1 & -2 & 0 & /:(-2) \\
\hline
\end{array}
$$

$$
\begin{array}{ccc|ccc l}
\hline
1 & 0 & 1 & 0 & 1 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & + \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & /\cdot(-1)/\cdot(-1) \\
\hline
1 & & & & & & \\
0 & 1 & 0 & \frac{1}{2} & -1 & 1 & \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & \\
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc|l}
\hline
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 0 & -2 & 1 & -2 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
0 & 0 & -2 & 1 & -2 & 0 & /:(-2) \\
\hline
\end{array}
$$

$$
\begin{array}{ccc|ccc|l}
\hline
1 & 0 & 1 & 0 & 1 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & + \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & /\cdot(-1) \; /\cdot(-1) \\
\hline
1 & 0 & & & & & \\
0 & 1 & 0 & \frac{1}{2} & -1 & 1 & \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & \\
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc|l}
\hline
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 0 & -2 & 1 & -2 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
0 & 0 & -2 & 1 & -2 & 0 & /:(-2) \\
\hline
\end{array}
$$

$$
\begin{array}{ccc|ccc|l}
\hline
1 & 0 & 1 & 0 & 1 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & + \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & /\cdot(-1)/\cdot(-1) \\
\hline
1 & 0 & 0 & & & & \\
0 & 1 & 0 & \frac{1}{2} & -1 & 1 & \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & \\
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc l}
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 0 & -2 & 1 & -2 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
0 & 0 & -2 & 1 & -2 & 0 & /:(-2) \\
\hline
\end{array}
$$

$$
\begin{array}{ccc|ccc l}
1 & 0 & 1 & 0 & 1 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & + \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & /\cdot(-1)/\cdot(-1) \\
\hline
1 & 0 & 0 & \frac{1}{2} & & & \\
0 & 1 & 0 & \frac{1}{2} & -1 & 1 & \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & \\
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc}
\hline
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
2 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 0 & -2 & 1 & -2 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
0 & 0 & -2 & 1 & -2 & 0 \\
\hline
\end{array}
\begin{array}{l}
\\ \\ \\ \\
/\cdot(-2) \\
+ \\
\\ \\ \\ \\ \\ \\
/:(-2) \\
\\
\end{array}
$$

$$
\begin{array}{ccc|ccc}
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 \\
\hline
1 & 0 & 0 & \frac{1}{2} & 0 & \\
0 & 1 & 0 & \frac{1}{2} & -1 & 1 \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 \\
\end{array}
\begin{array}{l}
+ \\
+ \\
/\cdot(-1)/\cdot(-1) \\
\\ \\ \\
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc}
\hline
2 & 0 & 0 & 1 & 0 & 0 \\
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
2 & 0 & 0 & 1 & 0 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 0 & -2 & 1 & -2 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
0 & 0 & -2 & 1 & -2 & 0 \\
\hline
\end{array}
\begin{array}{l}
\\ \\ \\ \\
/\cdot(-2) \\
+ \\
\\ \\ \\ \\ \\ \\
/:(-2)
\end{array}
$$

$$
\begin{array}{ccc|ccc}
\hline
1 & 0 & 1 & 0 & 1 & 0 \\
0 & 1 & 1 & 0 & 0 & 1 \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 \\
\hline
1 & 0 & 0 & \frac{1}{2} & 0 & 0 \\
0 & 1 & 0 & \frac{1}{2} & -1 & 1 \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0
\end{array}
\begin{array}{l}
+ \\
+ \\
/\cdot(-1)/\cdot(-1) \\
\\ \\ \\
\end{array}
$$

$$
T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
$$

$$
\begin{array}{ccc|ccc|l}
 & & & & & & \\
\hline
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 0 & -2 & 1 & -2 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
0 & 0 & -2 & 1 & -2 & 0 & /:(-2) \\
\hline
 & & & & & &
\end{array}
$$

$$
\begin{array}{ccc|ccc|l}
 & & & & & & \\
\hline
1 & 0 & 1 & 0 & 1 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & + \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & /\cdot(-1)/\cdot(-1) \\
\hline
1 & 0 & 0 & \frac{1}{2} & 0 & 0 & \\
0 & 1 & 0 & \frac{1}{2} & -1 & 1 & \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 &
\end{array}
$$

$$T^{-1} =$$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$\begin{array}{ccc|ccc l}
2 & 0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\ \hline
1 & 0 & 1 & 0 & 1 & 0 & /\cdot(-2) \\
2 & 0 & 0 & 1 & 0 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & \\ \hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 0 & -2 & 1 & -2 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\ \hline
1 & 0 & 1 & 0 & 1 & 0 & \\
0 & 1 & 1 & 0 & 0 & 1 & \\
0 & 0 & -2 & 1 & -2 & 0 & /:(-2) \\ \hline
\end{array}$$

$$\begin{array}{ccc|ccc l}
1 & 0 & 1 & 0 & 1 & 0 & + \\
0 & 1 & 1 & 0 & 0 & 1 & + \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 & /\cdot(-1)/\cdot(-1) \\ \hline
1 & 0 & 0 & \frac{1}{2} & 0 & 0 & \\
0 & 1 & 0 & \frac{1}{2} & -1 & 1 & \\
0 & 0 & 1 & -\frac{1}{2} & 1 & 0 &
\end{array}$$

$$T^{-1} = \begin{bmatrix} \frac{1}{2} & 0 & 0 \\ \frac{1}{2} & -1 & 1 \\ -\frac{1}{2} & 1 & 0 \end{bmatrix}$$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$p(t) = t^2 + 3t - 5$$

$$\boxed{X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}}$$

$$\mathcal{B} = \{t+2,\ t^2,\ t^2+t\} \qquad \mathcal{B}_{\text{kan}} = \{1, t, t^2\}$$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$X_{\mathcal{B}_{\text{kan}}} = T_{\mathcal{B}_{\text{kan}} \to \mathcal{B}} X_{\mathcal{B}} \rightsquigarrow X_{\mathcal{B}} = T^{-1} X_{\mathcal{B}_{\text{kan}}}$$

$$\mathcal{B} \xrightarrow{T^{-1}} \mathcal{B}_{\text{kan}}$$

$$p(t) = t^2 + 3t - 5$$

$$\boxed{X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}}$$

$$\mathcal{B} = \left\{t + 2,\ t^2,\ t^2 + t\right\} \qquad \mathcal{B}_{\text{kan}} = \left\{1, t, t^2\right\}$$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$$t + 2 \longrightarrow (2, 1, 0)$$

$$t^2 \longrightarrow (0, 0, 1)$$

$$t^2 + t \longrightarrow (0, 1, 1)$$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix} \qquad T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$X_{\mathcal{B}_{\text{kan}}} = T_{\mathcal{B}_{\text{kan}} \to \mathcal{B}} X_{\mathcal{B}} \rightsquigarrow X_{\mathcal{B}} = T^{-1} X_{\mathcal{B}_{\text{kan}}}$$

$$\mathcal{B} \xrightarrow{T^{-1}} \mathcal{B}_{\text{kan}}$$

$$T^{-1} = \begin{bmatrix} \frac{1}{2} & 0 & 0 \\ \frac{1}{2} & -1 & 1 \\ -\frac{1}{2} & 1 & 0 \end{bmatrix}$$

$$p(t) = t^2 + 3t - 5$$

$$\boxed{X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}}$$

$$\mathcal{B} = \left\{t+2,\ t^2,\ t^2+t\right\} \qquad \mathcal{B}_{\text{kan}} = \left\{1, t, t^2\right\}$$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$X_{\mathcal{B}_{\text{kan}}} = T_{\mathcal{B}_{\text{kan}} \to \mathcal{B}} X_{\mathcal{B}} \rightsquigarrow X_{\mathcal{B}} = T^{-1} X_{\mathcal{B}_{\text{kan}}}$$

$$\mathcal{B} \xrightarrow{T^{-1}} \mathcal{B}_{\text{kan}}$$

$$T^{-1} = \begin{bmatrix} \frac{1}{2} & 0 & 0 \\ \frac{1}{2} & -1 & 1 \\ -\frac{1}{2} & 1 & 0 \end{bmatrix}$$

$$X_{\mathcal{B}} =$$

$$p(t) = t^2 + 3t - 5$$

$$\boxed{X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}}$$

$$\mathcal{B} = \{t+2,\ t^2,\ t^2+t\} \qquad \mathcal{B}_{\text{kan}} = \{1, t, t^2\}$$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$X_{\mathcal{B}_{\text{kan}}} = T_{\mathcal{B}_{\text{kan}} \to \mathcal{B}} X_{\mathcal{B}} \rightsquigarrow X_{\mathcal{B}} = T^{-1} X_{\mathcal{B}_{\text{kan}}}$$

$$\mathcal{B} \xrightarrow{T^{-1}} \mathcal{B}_{\text{kan}}$$

$$X_{\mathcal{B}} = \begin{bmatrix} \frac{1}{2} & 0 & 0 \\ \frac{1}{2} & -1 & 1 \\ -\frac{1}{2} & 1 & 0 \end{bmatrix}$$

$$T^{-1} = \begin{bmatrix} \frac{1}{2} & 0 & 0 \\ \frac{1}{2} & -1 & 1 \\ -\frac{1}{2} & 1 & 0 \end{bmatrix}$$

$$p(t) = t^2 + 3t - 5$$

$$\boxed{X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}}$$

$$\mathcal{B} = \{t+2,\ t^2,\ t^2+t\} \qquad \mathcal{B}_{\text{kan}} = \{1, t, t^2\}$$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$X_{\mathcal{B}_{\text{kan}}} = T_{\mathcal{B}_{\text{kan}} \to \mathcal{B}} X_{\mathcal{B}} \rightsquigarrow X_{\mathcal{B}} = T^{-1} X_{\mathcal{B}_{\text{kan}}}$$

$$\mathcal{B} \xrightarrow{T^{-1}} \mathcal{B}_{\text{kan}}$$

$$X_{\mathcal{B}} = \begin{bmatrix} \frac{1}{2} & 0 & 0 \\ \frac{1}{2} & -1 & 1 \\ -\frac{1}{2} & 1 & 0 \end{bmatrix} \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

$$T^{-1} = \begin{bmatrix} \frac{1}{2} & 0 & 0 \\ \frac{1}{2} & -1 & 1 \\ -\frac{1}{2} & 1 & 0 \end{bmatrix}$$

$$p(t) = t^2 + 3t - 5$$

$$\boxed{X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}}$$

$$\mathcal{B} = \{t+2,\ t^2,\ t^2+t\} \qquad \mathcal{B}_{\text{kan}} = \{1, t, t^2\}$$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix} \qquad T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$X_{\mathcal{B}_{\text{kan}}} = T_{\mathcal{B}_{\text{kan}} \to \mathcal{B}} X_{\mathcal{B}} \rightsquigarrow X_{\mathcal{B}} = T^{-1} X_{\mathcal{B}_{\text{kan}}}$$

$$\mathcal{B} \xrightarrow{T^{-1}} \mathcal{B}_{\text{kan}}$$

$$X_{\mathcal{B}} = \begin{bmatrix} \frac{1}{2} & 0 & 0 \\ \frac{1}{2} & -1 & 1 \\ -\frac{1}{2} & 1 & 0 \end{bmatrix} \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix} = \begin{bmatrix} -\frac{5}{2} \\ -\frac{9}{2} \\ \frac{11}{2} \end{bmatrix}$$

$$T^{-1} = \begin{bmatrix} \frac{1}{2} & 0 & 0 \\ \frac{1}{2} & -1 & 1 \\ -\frac{1}{2} & 1 & 0 \end{bmatrix}$$

$$p(t) = t^2 + 3t - 5$$

$$\boxed{X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}}$$

$$\mathcal{B} = \{t+2,\ t^2,\ t^2+t\} \qquad \mathcal{B}_{\text{kan}} = \{1, t, t^2\}$$

$$\mathcal{B}_{\text{kan}} \xrightarrow{T} \mathcal{B}$$

$$t+2 \longrightarrow (2,1,0)$$

$$t^2 \longrightarrow (0,0,1)$$

$$t^2+t \longrightarrow (0,1,1)$$

$$X_{\mathcal{B}_{\text{kan}}} = \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix}$$

$$T = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

$$X_{\mathcal{B}_{\text{kan}}} = T_{\mathcal{B}_{\text{kan}} \to \mathcal{B}} X_{\mathcal{B}} \rightsquigarrow X_{\mathcal{B}} = T^{-1} X_{\mathcal{B}_{\text{kan}}}$$

$$\mathcal{B} \xrightarrow{T^{-1}} \mathcal{B}_{\text{kan}}$$

$$X_{\mathcal{B}} = \begin{bmatrix} \frac{1}{2} & 0 & 0 \\ \frac{1}{2} & -1 & 1 \\ -\frac{1}{2} & 1 & 0 \end{bmatrix} \begin{bmatrix} -5 \\ 3 \\ 1 \end{bmatrix} = \begin{bmatrix} -\frac{5}{2} \\ -\frac{9}{2} \\ \frac{11}{2} \end{bmatrix} \begin{array}{l} \leftsquigarrow \alpha_1 \\ \leftsquigarrow \alpha_2 \\ \leftsquigarrow \alpha_3 \end{array}$$

$$T^{-1} = \begin{bmatrix} \frac{1}{2} & 0 & 0 \\ \frac{1}{2} & -1 & 1 \\ -\frac{1}{2} & 1 & 0 \end{bmatrix}$$

treći zadatak

Zadatak 3

Neka je $V = \big\{(x, y, x+y) : x, y \in \mathbb{R}\big\}$.

a) *Dokažite da je* V *potprostor od* $\mathbb{R}^3$.

b) *Provjerite da je skup* $\mathcal{B}_1 = \big\{(1,0,1),\ (0,1,1)\big\}$ *baza za* V.

c) *Dokažite da je* $\mathcal{B}_2 = \big\{(1,1,2),\ (-2,1,-1)\big\}$ *također baza za* V.

d) *Odredite matricu prijelaza iz baze* $\mathcal{B}_1$ *u bazu* $\mathcal{B}_2$.

e) *Odredite koordinate vektora* $(-3,2,-1) \in V$ *u bazi* $\mathcal{B}_2$.

Rješenje

$$V = \left\{ (x, y, x + y) : x, y \in \mathbb{R} \right\}$$

a)

Rješenje

$$V = \{(x, y, x + y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V$

Rješenje

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\Longrightarrow} \alpha a + \beta b \in V$

Rješenje

$$V = \{(x, y, x + y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V$$

Rješenje

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1)$$

Rješenje

$$V = \{(x, y, x + y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

Rješenje

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \stackrel{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V$$

Rješenje

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V \implies b = (x_2, y_2, x_2 + y_2)$$

Rješenje

$$V = \{(x, y, x + y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V \implies b = (x_2, y_2, x_2 + y_2), \quad x_2, y_2 \in \mathbb{R}$$

Rješenje

$$V = \{(x, y, x + y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V \implies b = (x_2, y_2, x_2 + y_2), \quad x_2, y_2 \in \mathbb{R}$$

$\alpha a + \beta b =$

Rješenje

$$V = \{(x, y, x + y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V \implies b = (x_2, y_2, x_2 + y_2), \quad x_2, y_2 \in \mathbb{R}$$

$$\alpha a + \beta b = \alpha \cdot (x_1, y_1, x_1 + y_1)$$

Rješenje

$$V = \{(x, y, x + y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V \implies b = (x_2, y_2, x_2 + y_2), \quad x_2, y_2 \in \mathbb{R}$$

$$\alpha a + \beta b = \alpha \cdot (x_1, y_1, x_1 + y_1) +$$

Rješenje

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \stackrel{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V \implies b = (x_2, y_2, x_2 + y_2), \quad x_2, y_2 \in \mathbb{R}$$

$$\alpha a + \beta b = \alpha \cdot (x_1, y_1, x_1 + y_1) + \beta \cdot (x_2, y_2, x_2 + y_2)$$

Rješenje

$$V = \{(x, y, x + y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V \implies b = (x_2, y_2, x_2 + y_2), \quad x_2, y_2 \in \mathbb{R}$$

$$\alpha a + \beta b = \alpha \cdot (x_1, y_1, x_1 + y_1) + \beta \cdot (x_2, y_2, x_2 + y_2) =$$

$$= \big(\alpha x_1 + \beta x_2,$$

Rješenje

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V \implies b = (x_2, y_2, x_2 + y_2), \quad x_2, y_2 \in \mathbb{R}$$

$$\alpha a + \beta b = \alpha \cdot (x_1, y_1, x_1 + y_1) + \beta \cdot (x_2, y_2, x_2 + y_2) =$$

$$= \big(\alpha x_1 + \beta x_2,\ \alpha y_1 + \beta y_2,$$

Rješenje

$$V = \{(x, y, x + y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V \implies b = (x_2, y_2, x_2 + y_2), \quad x_2, y_2 \in \mathbb{R}$$

$$\alpha a + \beta b = \alpha \cdot (x_1, y_1, x_1 + y_1) + \beta \cdot (x_2, y_2, x_2 + y_2) =$$

$$= \big(\alpha x_1 + \beta x_2,\ \alpha y_1 + \beta y_2,\ \alpha(x_1 + y_1)$$

Rješenje

$$V = \{(x, y, x + y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V \implies b = (x_2, y_2, x_2 + y_2), \quad x_2, y_2 \in \mathbb{R}$$

$$\alpha a + \beta b = \alpha \cdot (x_1, y_1, x_1 + y_1) + \beta \cdot (x_2, y_2, x_2 + y_2) =$$

$$= \big(\alpha x_1 + \beta x_2,\ \alpha y_1 + \beta y_2,\ \alpha(x_1 + y_1) +$$

Rješenje

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V \implies b = (x_2, y_2, x_2 + y_2), \quad x_2, y_2 \in \mathbb{R}$$

$$\alpha a + \beta b = \alpha \cdot (x_1, y_1, x_1 + y_1) + \beta \cdot (x_2, y_2, x_2 + y_2) =$$

$$= \big(\alpha x_1 + \beta x_2,\ \alpha y_1 + \beta y_2,\ \alpha(x_1 + y_1) + \beta(x_2 + y_2)\big)$$

Rješenje

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V \implies b = (x_2, y_2, x_2 + y_2), \quad x_2, y_2 \in \mathbb{R}$$

$$\alpha a + \beta b = \alpha \cdot (x_1, y_1, x_1 + y_1) + \beta \cdot (x_2, y_2, x_2 + y_2) =$$
$$= \big(\alpha x_1 + \beta x_2,\ \alpha y_1 + \beta y_2,\ \alpha(x_1 + y_1) + \beta(x_2 + y_2)\big)$$

Rješenje

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\implies} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V \implies b = (x_2, y_2, x_2 + y_2), \quad x_2, y_2 \in \mathbb{R}$$

$$\begin{aligned} \alpha a + \beta b &= \alpha \cdot (x_1, y_1, x_1 + y_1) + \beta \cdot (x_2, y_2, x_2 + y_2) = \\ &= \big(\alpha x_1 + \beta x_2,\ \alpha y_1 + \beta y_2,\ \alpha(x_1 + y_1) + \beta(x_2 + y_2)\big) = \\ &= \big(\alpha x_1 + \beta x_2, \end{aligned}$$

Rješenje

$$V = \{(x, y, x + y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V \implies b = (x_2, y_2, x_2 + y_2), \quad x_2, y_2 \in \mathbb{R}$$

$$\begin{aligned}
\alpha a + \beta b &= \alpha \cdot (x_1, y_1, x_1 + y_1) + \beta \cdot (x_2, y_2, x_2 + y_2) = \\
&= \big(\alpha x_1 + \beta x_2,\ \alpha y_1 + \beta y_2,\ \alpha(x_1 + y_1) + \beta(x_2 + y_2)\big) = \\
&= \big(\alpha x_1 + \beta x_2,\ \alpha y_1 + \beta y_2,
\end{aligned}$$

Rješenje

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V \implies b = (x_2, y_2, x_2 + y_2), \quad x_2, y_2 \in \mathbb{R}$$

$$\alpha a + \beta b = \alpha \cdot (x_1, y_1, x_1 + y_1) + \beta \cdot (x_2, y_2, x_2 + y_2) =$$

$$= \big(\alpha x_1 + \beta x_2,\ \alpha y_1 + \beta y_2,\ \alpha(x_1 + y_1) + \beta(x_2 + y_2)\big) =$$

$$= \big(\alpha x_1 + \beta x_2,\ \alpha y_1 + \beta y_2,\ (\alpha x_1 + \beta x_2)$$

Rješenje

$$V = \{(x, y, x + y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V \implies b = (x_2, y_2, x_2 + y_2), \quad x_2, y_2 \in \mathbb{R}$$

$$\begin{aligned} \alpha a + \beta b &= \alpha \cdot (x_1, y_1, x_1 + y_1) + \beta \cdot (x_2, y_2, x_2 + y_2) = \\ &= \big(\alpha x_1 + \beta x_2,\ \alpha y_1 + \beta y_2,\ \alpha(x_1 + y_1) + \beta(x_2 + y_2)\big) = \\ &= \big(\alpha x_1 + \beta x_2,\ \alpha y_1 + \beta y_2,\ (\alpha x_1 + \beta x_2) + \end{aligned}$$

Rješenje

$$V = \{(x, y, x + y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \stackrel{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V \implies b = (x_2, y_2, x_2 + y_2), \quad x_2, y_2 \in \mathbb{R}$$

$$\begin{aligned}\alpha a + \beta b &= \alpha \cdot (x_1, y_1, x_1 + y_1) + \beta \cdot (x_2, y_2, x_2 + y_2) = \\ &= \big(\alpha x_1 + \beta x_2,\ \alpha y_1 + \beta y_2,\ \alpha(x_1 + y_1) + \beta(x_2 + y_2)\big) = \\ &= \big(\alpha x_1 + \beta x_2,\ \alpha y_1 + \beta y_2,\ (\alpha x_1 + \beta x_2) + (\alpha y_1 + \beta y_2)\big)\end{aligned}$$

Rješenje

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \stackrel{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V \implies b = (x_2, y_2, x_2 + y_2), \quad x_2, y_2 \in \mathbb{R}$$

$$\begin{aligned} \alpha a + \beta b &= \alpha \cdot (x_1, y_1, x_1 + y_1) + \beta \cdot (x_2, y_2, x_2 + y_2) = \\ &= \big(\alpha x_1 + \beta x_2,\ \alpha y_1 + \beta y_2,\ \alpha(x_1 + y_1) + \beta(x_2 + y_2)\big) = \\ &= \big(\alpha x_1 + \beta x_2,\ \alpha y_1 + \beta y_2,\ (\alpha x_1 + \beta x_2) + (\alpha y_1 + \beta y_2)\big) \end{aligned}$$

Rješenje

$$V = \{(x, y, x + y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\implies} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V \implies b = (x_2, y_2, x_2 + y_2), \quad x_2, y_2 \in \mathbb{R}$$

$$\begin{aligned} \alpha a + \beta b &= \alpha \cdot (x_1, y_1, x_1 + y_1) + \beta \cdot (x_2, y_2, x_2 + y_2) = \\ &= \big(\alpha x_1 + \beta x_2,\ \alpha y_1 + \beta y_2,\ \alpha(x_1 + y_1) + \beta(x_2 + y_2)\big) = \\ &= \big(\alpha x_1 + \beta x_2,\ \alpha y_1 + \beta y_2,\ (\alpha x_1 + \beta x_2) + (\alpha y_1 + \beta y_2)\big) \end{aligned}$$

$$\implies \alpha a + \beta b \in V$$

Rješenje

$$V = \{(x, y, x + y) : x, y \in \mathbb{R}\}$$

a) $\alpha, \beta \in \mathbb{R},\ a, b \in V \overset{?}{\Longrightarrow} \alpha a + \beta b \in V$

$$a \in V \implies a = (x_1, y_1, x_1 + y_1), \quad x_1, y_1 \in \mathbb{R}$$

$$b \in V \implies b = (x_2, y_2, x_2 + y_2), \quad x_2, y_2 \in \mathbb{R}$$

$$\begin{aligned} \alpha a + \beta b &= \alpha \cdot (x_1, y_1, x_1 + y_1) + \beta \cdot (x_2, y_2, x_2 + y_2) = \\ &= \big(\alpha x_1 + \beta x_2,\ \alpha y_1 + \beta y_2,\ \alpha(x_1 + y_1) + \beta(x_2 + y_2)\big) = \\ &= \big(\alpha x_1 + \beta x_2,\ \alpha y_1 + \beta y_2,\ (\alpha x_1 + \beta x_2) + (\alpha y_1 + \beta y_2)\big) \end{aligned}$$

$$\implies \alpha a + \beta b \in V \implies V < \mathbb{R}^3$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad$ $V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

b)

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

b) $(x,y,x+y) =$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

b) $(x,y,x+y) = x \cdot$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad$ $V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

b) $(x, y, x+y) = x \cdot (1,$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad$ $V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

b) $(x, y, x+y) = x \cdot (1, 0,$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

b) $(x,y,x+y) = x \cdot (1,0,1)$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

b) $(x,y,x+y) = x \cdot (1,0,1) + y \cdot$

$\mathcal{B}_1 = \big\{(1,0,1),\ (0,1,1)\big\}$ $V = \big\{(x,y,x+y) : x,y \in \mathbb{R}\big\}$

b) $(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

b) $(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

b) $(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

b) $(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V,

$\mathcal{B}_1 = \big\{(1,0,1),\,(0,1,1)\big\}$ $\qquad$ $V = \big\{(x,y,x+y) : x,y \in \mathbb{R}\big\}$

b) $(x,y,x+y) = x\cdot(1,0,1) + y\cdot(0,1,1)$

Skup $\mathcal{B}_1 = \big\{(1,0,1),\,(0,1,1)\big\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad$ $V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

b) $(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

(x, y)

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad$ $V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

b) $(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x, y) \leftsquigarrow$ koordinate vektora $(x, y, x+y)$ u bazi $\mathcal{B}_1$

$\mathcal{B}_1 = \{(1,0,1),\,(0,1,1)\}$ $\qquad$ $V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\,(-2,1,-1)\}$

b) $(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\,(0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x,y) \leftarrow$ koordinate vektora $(x,y,x+y)$ u bazi $\mathcal{B}_1$

c)

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad$ $V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x, y) \leftsquigarrow$ koordinate vektora $(x, y, x+y)$ u bazi $\mathcal{B}_1$

c) $\begin{bmatrix} \\ \\ \end{bmatrix}$

$\mathcal{B}_1 = \{(1,0,1),\,(0,1,1)\}$ $\qquad$ $V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\,(-2,1,-1)\}$

b) $(x,y,x+y) = x\cdot(1,0,1) + y\cdot(0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\,(0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x,y) \leftarrow$ koordinate vektora $(x,y,x+y)$ u bazi $\mathcal{B}_1$

c) $\begin{bmatrix} 1 & & \\ 1 & & \\ 2 & & \end{bmatrix}$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x,y) \leftarrow$ koordinate vektora $(x,y,x+y)$ u bazi $\mathcal{B}_1$

c)

$$\begin{bmatrix} 1 & -2 & & \\ 1 & 1 & & \\ 2 & -1 & & \end{bmatrix}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x,y,x+y) = x\cdot(1,0,1) + y\cdot(0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x,y) \leftsquigarrow$ koordinate vektora $(x,y,x+y)$ u bazi $\mathcal{B}_1$

c)

$$\left[\begin{array}{cc:c} 1 & -2 & \\ 1 & 1 & \\ 2 & -1 & \end{array}\right]$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad$ $V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x,y) \leftsquigarrow$ koordinate vektora $(x,y,x+y)$ u bazi $\mathcal{B}_1$

c)

$$\left[\begin{array}{cc:c} 1 & -2 & 1 \\ 1 & 1 & 0 \\ 2 & -1 & 1 \end{array}\right]$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad$ $V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$$(x, y) \leftsquigarrow \text{koordinate vektora } (x, y, x+y) \text{ u bazi } \mathcal{B}_1$$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right]$$

$\mathcal{B}_1 = \{(1,0,1),\, (0,1,1)\}$ $\qquad$ $V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\, (-2,1,-1)\}$

b) $(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\, (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$$(x, y) \leftsquigarrow \text{ koordinate vektora } (x, y, x+y) \text{ u bazi } \mathcal{B}_1$$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right]$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad\qquad$ $V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x,y) \leftsquigarrow$ koordinate vektora $(x,y,x+y)$ u bazi $\mathcal{B}_1$

c)
$$\left[\begin{array}{cc|cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] / \cdot (-1)$$

$\mathcal{B}_1 = \{(1,0,1),\,(0,1,1)\}$ $\qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\,(-2,1,-1)\}$

b) $(x,y,x+y) = x\cdot(1,0,1) + y\cdot(0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\,(0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$$(x,y) \leftarrow \text{koordinate vektora } (x,y,x+y) \text{ u bazi } \mathcal{B}_1$$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] \begin{array}{l} /\cdot(-1) \\ + \\ \\ \end{array}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad$ $V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x, y) \leftarrow$ koordinate vektora $(x, y, x+y)$ u bazi $\mathcal{B}_1$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] \begin{array}{l} /\cdot(-1) /\cdot(-2) \\ \leftarrow + \\ \end{array}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x, y) \leftarrow$ koordinate vektora $(x, y, x+y)$ u bazi $\mathcal{B}_1$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] \begin{array}{l} /\cdot(-1)\ /\cdot(-2) \\ \leftarrow + \\ \leftarrow + \end{array}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad$ $V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x,y) \leftarrow$ koordinate vektora $(x,y,x+y)$ u bazi $\mathcal{B}_1$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] \begin{array}{l} /\cdot(-1)\ /\cdot(-2) \\ + \\ + \end{array} \sim \left[\begin{array}{cc:cc} & & & \\ & & & \\ & & & \end{array}\right]$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x,y,x+y) = x\cdot(1,0,1) + y\cdot(0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$$(x,y) \leftarrow \text{koordinate vektora } (x,y,x+y) \text{ u bazi } \mathcal{B}_1$$

c)
$$\left[\begin{array}{cc|cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] /\cdot(-1)\ /\cdot(-2) \quad \sim \left[\begin{array}{cc|cc} 1 & -2 & 1 & 0 \\ & & & \\ & & & \end{array}\right]$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x, y) \leftsquigarrow$ koordinate vektora $(x, y, x+y)$ u bazi $\mathcal{B}_1$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] \begin{array}{l} /\cdot(-1)\ /\cdot(-2) \\ \quad + \\ \quad\quad + \end{array} \sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & & & \\ & & & \end{array}\right]$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad$ $V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x, y) \leftsquigarrow$ koordinate vektora $(x, y, x+y)$ u bazi $\mathcal{B}_1$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] /\cdot(-1) \,/\cdot(-2) \quad \sim \quad \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & & \\ & & & \end{array}\right]$$

$\mathcal{B}_1 = \{(1,0,1),\,(0,1,1)\}$ $\qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\,(-2,1,-1)\}$

b) $(x,y,x+y) = x\cdot(1,0,1) + y\cdot(0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\,(0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

(x,y) ⟵ koordinate vektora $(x,y,x+y)$ u bazi $\mathcal{B}_1$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] /\cdot(-1)\,/\cdot(-2) \sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & \\ & & & \end{array}\right]$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x,y,x+y) = x\cdot(1,0,1) + y\cdot(0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x,y) \leftarrow$ koordinate vektora $(x,y,x+y)$ u bazi $\mathcal{B}_1$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] \begin{array}{l} /\cdot(-1)\,/\cdot(-2) \\ \leftarrow + \\ \leftarrow + \end{array} \sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & 1 \\ & & & \end{array}\right]$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad\qquad$ $V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x,y,x+y) = x\cdot(1,0,1) + y\cdot(0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x,y) \leftsquigarrow$ koordinate vektora $(x,y,x+y)$ u bazi $\mathcal{B}_1$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] /\cdot(-1)\ /\cdot(-2) \quad \sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & 1 \\ 0 & & & \end{array}\right]$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\} \qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

b) $(x,y,x+y) = x\cdot(1,0,1) + y\cdot(0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$$(x,y) \leftsquigarrow \text{koordinate vektora } (x,y,x+y) \text{ u bazi } \mathcal{B}_1$$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] /\cdot(-1)\ /\cdot(-2) \sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & 1 \\ 0 & 3 & & \end{array}\right]$$

$\mathcal{B}_1 = \{(1,0,1),\,(0,1,1)\}$ $\qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\,(-2,1,-1)\}$

b) $(x,y,x+y) = x\cdot(1,0,1) + y\cdot(0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\,(0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$$(x,y) \leftsquigarrow \text{koordinate vektora } (x,y,x+y) \text{ u bazi } \mathcal{B}_1$$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] /\cdot(-1)\ /\cdot(-2) \quad \begin{array}{c} \\ + \\ + \end{array} \sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & 1 \\ 0 & 3 & -1 & \end{array}\right]$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x,y) \leftarrow$ koordinate vektora $(x,y,x+y)$ u bazi $\mathcal{B}_1$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] /\cdot(-1) /\cdot(-2) \quad \sim \quad \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & 1 \\ 0 & 3 & -1 & 1 \end{array}\right]$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

b) $(x,y,x+y) = x\cdot(1,0,1) + y\cdot(0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$$(x,y) \leftarrow\!\sim\!\sim\!\sim \text{ koordinate vektora } (x,y,x+y) \text{ u bazi } \mathcal{B}_1$$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] /\cdot(-1)\ /\cdot(-2) \sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & 1 \\ 0 & 3 & -1 & 1 \end{array}\right]$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x,y,x+y) = x\cdot(1,0,1) + y\cdot(0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x,y) \leftarrow$ koordinate vektora $(x,y,x+y)$ u bazi $\mathcal{B}_1$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] \begin{array}{l} /\cdot(-1)\,/\cdot(-2) \\ + \\ + \end{array} \sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & 1 \\ 0 & 3 & -1 & 1 \end{array}\right] \begin{array}{l} \\ /\cdot(-1) \\ \\ \end{array}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$$(x, y) \leftarrow \text{koordinate vektora } (x, y, x+y) \text{ u bazi } \mathcal{B}_1$$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] \begin{array}{l} /\cdot(-1)\ /\cdot(-2) \\ + \\ + \end{array} \sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & 1 \\ 0 & 3 & -1 & 1 \end{array}\right] \begin{array}{l} \\ /\cdot(-1) \\ + \end{array}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$$(x,y) \leftarrow \text{koordinate vektora } (x,y,x+y) \text{ u bazi } \mathcal{B}_1$$

c)
$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] /\cdot(-1)\ /\cdot(-2) \sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & 1 \\ 0 & 3 & -1 & 1 \end{array}\right] /\cdot(-1) \sim$$

$$\sim \left[\begin{array}{c:c} & \end{array}\right]$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$$(x,y) \leftsquigarrow \text{koordinate vektora } (x,y,x+y) \text{ u bazi } \mathcal{B}_1$$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] /\cdot(-1)\ /\cdot(-2) \sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & 1 \\ 0 & 3 & -1 & 1 \end{array}\right] /\cdot(-1) \sim$$

$$\sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ & & & \\ & & & \end{array}\right]$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x,y,x+y) = x\cdot(1,0,1) + y\cdot(0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x,y) \leftsquigarrow$ koordinate vektora $(x,y,x+y)$ u bazi $\mathcal{B}_1$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] \begin{array}{l} /\cdot(-1)\,/\cdot(-2) \\ + \\ + \end{array} \sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & 1 \\ 0 & 3 & -1 & 1 \end{array}\right] \begin{array}{l} \\ /\cdot(-1) \\ + \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & 1 \\ & & & \end{array}\right]$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x,y,x+y) = x\cdot(1,0,1) + y\cdot(0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x,y) \leftsquigarrow$ koordinate vektora $(x,y,x+y)$ u bazi $\mathcal{B}_1$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] /\cdot(-1)\ /\cdot(-2) \quad \sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & 1 \\ 0 & 3 & -1 & 1 \end{array}\right] /\cdot(-1) \sim$$

$$\sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & 1 \\ 0 & 0 & 0 & 0 \end{array}\right]$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x, y) \leftsquigarrow$ koordinate vektora $(x, y, x+y)$ u bazi $\mathcal{B}_1$

c)
$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] \begin{array}{l} /\cdot(-1)\ /\cdot(-2) \\ \leftarrow + \\ \leftarrow + \end{array} \sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & 1 \\ 0 & 3 & -1 & 1 \end{array}\right] \begin{array}{l} \\ /\cdot(-1) \\ \leftarrow + \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & 1 \\ 0 & 0 & 0 & 0 \end{array}\right]$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad$ $V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x,y) \leftarrow$ koordinate vektora $(x,y,x+y)$ u bazi $\mathcal{B}_1$

c)
$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] /\cdot(-1) \, /\cdot(-2) \sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & 1 \\ 0 & 3 & -1 & 1 \end{array}\right] /\cdot(-1) \sim$$

$$\sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & 1 \\ 0 & 0 & 0 & 0 \end{array}\right]$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

b) $(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)$

Skup $\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ je skup izvodnica za V, a očito je i linearno nezavisni pa je $\mathcal{B}_1$ jedna baza za V.

$(x,y) \leftsquigarrow$ koordinate vektora $(x,y,x+y)$ u bazi $\mathcal{B}_1$

c)

$$\left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 2 & -1 & 1 & 1 \end{array}\right] \begin{array}{l} /\cdot(-1)\,/\cdot(-2) \\ + \\ + \end{array} \sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & 1 \\ 0 & 3 & -1 & 1 \end{array}\right] \begin{array}{l} \\ /\cdot(-1) \\ + \end{array} \sim$$

$$\sim \left[\begin{array}{cc:cc} 1 & -2 & 1 & 0 \\ 0 & 3 & -1 & 1 \\ 0 & 0 & 0 & 0 \end{array}\right]$$

$\mathcal{B}_1$ i $\mathcal{B}_2$ razapinju isti potprostor od $\mathbb{R}^3$, tj. $\mathcal{B}_2$ je također baza za V.

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

d) $\mathcal{B}_1 \xrightarrow{\ T\ } \mathcal{B}_2$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

$$\boxed{\dim V = 2}$$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

$$\boxed{\dim V = 2}$$

$$T = \begin{bmatrix} \quad & \quad \end{bmatrix}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$(1,1,2) =$

$$T = \begin{bmatrix} \quad & \quad \\ \quad & \quad \end{bmatrix}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$(1,1,2) =$

$$T = \begin{bmatrix} & \\ & \end{bmatrix}$$

$$\boxed{(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1)$$

$$T = \begin{bmatrix} & \\ & \end{bmatrix}$$

$$\boxed{(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) +$$

$$T = \begin{bmatrix} \quad & \quad \end{bmatrix}$$

$$\boxed{(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$\boxed{\dim V = 2}$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} & \\ & \end{bmatrix}$$

$$\boxed{(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} 1 & \\ 1 & \end{bmatrix}$$

$$\boxed{(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$(-2,1,-1) =$$

$$T = \begin{bmatrix} 1 & \\ 1 & \end{bmatrix}$$

$$\boxed{(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$(-2,1,-1) = -2 \cdot (1,0,1)$$

$$T = \begin{bmatrix} 1 & \\ 1 & \end{bmatrix}$$

$$\boxed{(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$(-2,1,-1) = -2 \cdot (1,0,1) +$$

$$T = \begin{bmatrix} 1 & \\ 1 & \end{bmatrix}$$

$$\boxed{(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$(-2,1,-1) = -2 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} 1 & \\ 1 & \end{bmatrix}$$

$$\boxed{(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad$ $V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$ $\qquad$ $\boxed{\dim V = 2}$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$
$$(-2,1,-1) = -2 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}$$

$$\boxed{(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$(-2,1,-1) = -2 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}$$

e) $(-3, 2, -1)$

$$\boxed{(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$\boxed{\dim V = 2}$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$
$$(-2,1,-1) = -2 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}$$

e) $(-3,2,-1)$ **1. način:** pomoću matrice prijelaza

$$\boxed{(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$\boxed{\dim V = 2}$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$(-2,1,-1) = -2 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}$$

e) $(-3,2,-1)$ **1. način:** pomoću matrice prijelaza

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}$$

$$\boxed{(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\quad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$ $\quad \boxed{\dim V = 2}$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$
$$(-2,1,-1) = -2 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}$$

e) $(-3,2,-1)$ **1. način:** pomoću matrice prijelaza

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2}$$

$$X_{\mathcal{B}_1} = \begin{bmatrix} -3 \\ 2 \end{bmatrix}$$

$$\boxed{(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$\boxed{\dim V = 2}$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$
$$(-2,1,-1) = -2 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}$$

e) $(-3,2,-1)$ **1. način:** pomoću matrice prijelaza

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2} \rightsquigarrow X_{\mathcal{B}_2} = T^{-1} X_{\mathcal{B}_1}$$

$$X_{\mathcal{B}_1} = \begin{bmatrix} -3 \\ 2 \end{bmatrix}$$

$$\boxed{(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$
$$(-2,1,-1) = -2 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}$$

e) $(-3,2,-1)$ **1. način:** pomoću matrice prijelaza

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2} \rightsquigarrow X_{\mathcal{B}_2} = T^{-1} X_{\mathcal{B}_1}$$

$$X_{\mathcal{B}_1} = \begin{bmatrix} -3 \\ 2 \end{bmatrix}$$

$X_{\mathcal{B}_2} =$

$$\boxed{(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$\boxed{\dim V = 2}$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$
$$(-2,1,-1) = -2 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}$$

e) $(-3, 2, -1)$ **1. način:** pomoću matrice prijelaza

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2} \rightsquigarrow X_{\mathcal{B}_2} = T^{-1} X_{\mathcal{B}_1}$$

$$X_{\mathcal{B}_1} = \begin{bmatrix} -3 \\ 2 \end{bmatrix}$$

$$X_{\mathcal{B}_2} = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}^{-1}$$

$$\boxed{(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$(-2,1,-1) = -2 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}$$

e) $(-3,2,-1)$ **1. način:** pomoću matrice prijelaza

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2} \rightsquigarrow X_{\mathcal{B}_2} = T^{-1} X_{\mathcal{B}_1}$$

$$X_{\mathcal{B}_1} = \begin{bmatrix} -3 \\ 2 \end{bmatrix}$$

$$X_{\mathcal{B}_2} = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}^{-1} \begin{bmatrix} -3 \\ 2 \end{bmatrix}$$

$$\boxed{(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$$

$$\boxed{\dim V = 2}$$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$(-2,1,-1) = -2 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}$$

e) $(-3,2,-1)$ **1. način:** pomoću matrice prijelaza

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2} \rightsquigarrow X_{\mathcal{B}_2} = T^{-1} X_{\mathcal{B}_1}$$

$$X_{\mathcal{B}_1} = \begin{bmatrix} -3 \\ 2 \end{bmatrix}$$

$$X_{\mathcal{B}_2} = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}^{-1} \begin{bmatrix} -3 \\ 2 \end{bmatrix} = \frac{1}{3}$$

$$\boxed{(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$(-2,1,-1) = -2 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}$$

e) $(-3,2,-1)$ **1. način:** pomoću matrice prijelaza

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2} \rightsquigarrow X_{\mathcal{B}_2} = T^{-1} X_{\mathcal{B}_1}$$

$$X_{\mathcal{B}_1} = \begin{bmatrix} -3 \\ 2 \end{bmatrix}$$

$$X_{\mathcal{B}_2} = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}^{-1} \begin{bmatrix} -3 \\ 2 \end{bmatrix} = \frac{1}{3} \begin{bmatrix} \quad \end{bmatrix}$$

$$\boxed{(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$
$$(-2,1,-1) = -2 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}$$

e) $(-3,2,-1)$ **1. način:** pomoću matrice prijelaza

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2} \rightsquigarrow X_{\mathcal{B}_2} = T^{-1} X_{\mathcal{B}_1}$$

$$X_{\mathcal{B}_1} = \begin{bmatrix} -3 \\ 2 \end{bmatrix}$$

$$X_{\mathcal{B}_2} = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}^{-1} \begin{bmatrix} -3 \\ 2 \end{bmatrix} = \frac{1}{3} \begin{bmatrix} 1 & \\ & \end{bmatrix}$$

$$\boxed{(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$ $\qquad \boxed{\dim V = 2}$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$
$$(-2,1,-1) = -2 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}$$

e) $(-3,2,-1)$ $\quad$ **1. način:** pomoću matrice prijelaza

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2} \rightsquigarrow X_{\mathcal{B}_2} = T^{-1} X_{\mathcal{B}_1}$$

$$X_{\mathcal{B}_1} = \begin{bmatrix} -3 \\ 2 \end{bmatrix}$$

$$X_{\mathcal{B}_2} = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}^{-1} \begin{bmatrix} -3 \\ 2 \end{bmatrix} = \frac{1}{3} \begin{bmatrix} 1 & \\ & 1 \end{bmatrix}$$

$$\boxed{(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$
$$(-2,1,-1) = -2 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}$$

e) $(-3, 2, -1)$ **1. način:** pomoću matrice prijelaza

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2} \rightsquigarrow X_{\mathcal{B}_2} = T^{-1} X_{\mathcal{B}_1}$$

$$X_{\mathcal{B}_1} = \begin{bmatrix} -3 \\ 2 \end{bmatrix}$$

$$X_{\mathcal{B}_2} = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}^{-1} \begin{bmatrix} -3 \\ 2 \end{bmatrix} = \frac{1}{3} \begin{bmatrix} 1 & \\ -1 & 1 \end{bmatrix}$$

$$\boxed{(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$(-2,1,-1) = -2 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}$$

e) $(-3,2,-1)$ **1. način:** pomoću matrice prijelaza

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2} \rightsquigarrow X_{\mathcal{B}_2} = T^{-1} X_{\mathcal{B}_1}$$

$$X_{\mathcal{B}_1} = \begin{bmatrix} -3 \\ 2 \end{bmatrix}$$

$$X_{\mathcal{B}_2} = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}^{-1} \begin{bmatrix} -3 \\ 2 \end{bmatrix} = \frac{1}{3} \begin{bmatrix} 1 & 2 \\ -1 & 1 \end{bmatrix}$$

$$\boxed{(x,y,x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$(-2,1,-1) = -2 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}$$

e) $(-3, 2, -1)$ **1. način:** pomoću matrice prijelaza

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2} \rightsquigarrow X_{\mathcal{B}_2} = T^{-1} X_{\mathcal{B}_1}$$

$$X_{\mathcal{B}_1} = \begin{bmatrix} -3 \\ 2 \end{bmatrix}$$

$$X_{\mathcal{B}_2} = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}^{-1} \begin{bmatrix} -3 \\ 2 \end{bmatrix} = \frac{1}{3} \begin{bmatrix} 1 & 2 \\ -1 & 1 \end{bmatrix} \begin{bmatrix} -3 \\ 2 \end{bmatrix}$$

$$\boxed{(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$(-2,1,-1) = -2 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}$$

e) $(-3,2,-1)$ **1. način:** pomoću matrice prijelaza

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2} \rightsquigarrow X_{\mathcal{B}_2} = T^{-1} X_{\mathcal{B}_1}$$

$$X_{\mathcal{B}_1} = \begin{bmatrix} -3 \\ 2 \end{bmatrix}$$

$$X_{\mathcal{B}_2} = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}^{-1} \begin{bmatrix} -3 \\ 2 \end{bmatrix} = \frac{1}{3} \begin{bmatrix} 1 & 2 \\ -1 & 1 \end{bmatrix} \begin{bmatrix} -3 \\ 2 \end{bmatrix}$$

$$X_{\mathcal{B}_2} =$$

$$\boxed{(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

d) $\mathcal{B}_1 \xrightarrow{T} \mathcal{B}_2$

$$(1,1,2) = 1 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$(-2,1,-1) = -2 \cdot (1,0,1) + 1 \cdot (0,1,1)$$

$$T = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}$$

e) $(-3, 2, -1)$ **1. način:** pomoću matrice prijelaza

$$X_{\mathcal{B}_1} = T_{\mathcal{B}_1 \to \mathcal{B}_2} X_{\mathcal{B}_2} \rightsquigarrow X_{\mathcal{B}_2} = T^{-1} X_{\mathcal{B}_1}$$

$$X_{\mathcal{B}_1} = \begin{bmatrix} -3 \\ 2 \end{bmatrix}$$

$$X_{\mathcal{B}_2} = \begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}^{-1} \begin{bmatrix} -3 \\ 2 \end{bmatrix} = \frac{1}{3} \begin{bmatrix} 1 & 2 \\ -1 & 1 \end{bmatrix} \begin{bmatrix} -3 \\ 2 \end{bmatrix}$$

$$X_{\mathcal{B}_2} = \begin{bmatrix} \frac{1}{3} \\ \frac{5}{3} \end{bmatrix}$$

$$\boxed{(x, y, x+y) = x \cdot (1,0,1) + y \cdot (0,1,1)}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\dim V = 2$

2. način: bez korištenja matrice prijelaza

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$(-3,2,-1) =$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3, 2, -1) = \alpha_1 \cdot (1,1,2)$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) +$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\alpha_1 - 2\alpha_2 = -3$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

2. način: bez korištenja matrice prijelaza

$$(-3, 2, -1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \end{aligned}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline & & \end{array}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

α_1	α_2	
1	-2	-3

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

α_1	α_2	
1	-2	-3
1	1	2

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

α_1	α_2	
1	-2	-3
1	1	2
2	-1	-1

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \\ 1 & 1 & 2 \\ 2 & -1 & -1 \\ \hline & & \end{array}$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

α_1	α_2	
1	-2	-3
1	1	2
2	-1	-1

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \quad /\cdot(-1) \\ 1 & 1 & 2 \\ 2 & -1 & -1 \\ \hline & & \end{array}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|cl} \alpha_1 & \alpha_2 & & \\ \hline 1 & -2 & -3 & /\cdot(-1) \\ 1 & 1 & 2 & + \\ 2 & -1 & -1 & \\ \hline & & & \end{array}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

α_1	α_2		
1	-2	-3	$/\cdot(-1)\ /\cdot(-2)$
1	1	2	$+$
2	-1	-1	

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3, 2, -1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \\ 1 & 1 & 2 \\ 2 & -1 & -1 \\ \hline & & \end{array} \quad \begin{array}{l} /\cdot(-1)\ /\cdot(-2) \\ + \\ + \end{array}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{array}{r} \alpha_1 - 2\alpha_2 = -3 \\ \alpha_1 + \alpha_2 = 2 \\ 2\alpha_1 - \alpha_2 = -1 \end{array}\right\}$$

α_1	α_2		
1	-2	-3	$/\cdot(-1)$ $/\cdot(-2)$
1	1	2	$+$
2	-1	-1	$+$
1	-2	-3	

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \\ 1 & 1 & 2 \\ 2 & -1 & -1 \\ \hline 1 & -2 & -3 \\ 0 & & \\ & & \\ \end{array} \quad \begin{array}{l} \\ /\cdot(-1)\ /\cdot(-2) \\ + \\ + \\ \\ \\ \\ \end{array}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|cl}
\alpha_1 & \alpha_2 & & \\
\hline
1 & -2 & -3 & /\cdot(-1)\ /\cdot(-2) \\
1 & 1 & 2 & \quad + \\
2 & -1 & -1 & \quad + \\
\hline
1 & -2 & -3 & \\
0 & 3 & & \\
 & & &
\end{array}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

α_1	α_2		
1	-2	-3	$/\cdot(-1)$ $/\cdot(-2)$
1	1	2	$+$
2	-1	-1	$+$
1	-2	-3	
0	3	5	

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\} \qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \quad /\cdot(-1)\ /\cdot(-2) \\ 1 & 1 & 2 \quad + \\ 2 & -1 & -1 \quad + \\ \hline 1 & -2 & -3 \\ 0 & 3 & 5 \\ 0 & & \end{array}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|cl} \alpha_1 & \alpha_2 & & \\ \hline 1 & -2 & -3 & /\cdot(-1)\ /\cdot(-2) \\ 1 & 1 & 2 & + \\ 2 & -1 & -1 & + \\ \hline 1 & -2 & -3 & \\ 0 & 3 & 5 & \\ 0 & 3 & & \end{array}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|cl} \alpha_1 & \alpha_2 & & \\ \hline 1 & -2 & -3 & /\cdot(-1)\ /\cdot(-2) \\ 1 & 1 & 2 & + \\ 2 & -1 & -1 & + \\ \hline 1 & -2 & -3 & \\ 0 & 3 & 5 & \\ 0 & 3 & 5 & \end{array}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|cl} \alpha_1 & \alpha_2 & & \\ \hline 1 & -2 & -3 & /\cdot(-1)\ /\cdot(-2) \\ 1 & 1 & 2 & + \\ 2 & -1 & -1 & + \\ \hline 1 & -2 & -3 & \\ 0 & 3 & 5 & \\ 0 & 3 & 5 & \\ \hline & & & \end{array}$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \\ 1 & 1 & 2 \\ 2 & -1 & -1 \\ \hline 1 & -2 & -3 \\ 0 & 3 & 5 \\ 0 & 3 & 5 \\ \hline & & \end{array} \quad \begin{array}{l} /\cdot(-1)\ /\cdot(-2) \\ + \\ + \end{array}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline & & \end{array}$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \\ 1 & 1 & 2 \\ 2 & -1 & -1 \\ \hline 1 & -2 & -3 \\ 0 & 3 & 5 \\ 0 & 3 & 5 \\ \hline & & \end{array} \quad \begin{array}{l} / \cdot (-1)\ / \cdot (-2) \\ + \\ + \end{array}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \\ & & \end{array}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3, 2, -1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \quad /\cdot(-1)\ /\cdot(-2) \\ 1 & 1 & 2 \quad + \\ 2 & -1 & -1 \quad + \\ \hline 1 & -2 & -3 \\ 0 & 3 & 5 \\ 0 & 3 & 5 \\ \hline & & \end{array}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \\ 0 & 3 & 5 \end{array}$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\} \qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

α_1	α_2		
1	-2	-3	$/\cdot(-1)$ $/\cdot(-2)$
1	1	2	+
2	-1	-1	+
1	-2	-3	
0	3	5	
0	3	5	

α_1	α_2	
1	-2	-3
0	3	5

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3, 2, -1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

α_1	α_2		
1	-2	-3	$/\cdot(-1)$ $/\cdot(-2)$
1	1	2	$+$
2	-1	-1	$+$
1	-2	-3	
0	3	5	
0	3	5	

α_1	α_2	
1	-2	-3
0	3	5

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3, 2, -1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2, 1, -1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|cl} \alpha_1 & \alpha_2 & & \\ \hline 1 & -2 & -3 & /\cdot(-1)\ /\cdot(-2) \\ 1 & 1 & 2 & + \\ 2 & -1 & -1 & + \\ \hline 1 & -2 & -3 & \\ 0 & 3 & 5 & \\ 0 & 3 & 5 & \\ \hline \end{array}
\qquad
\begin{array}{cc|cl} \alpha_1 & \alpha_2 & & \\ \hline 1 & -2 & -3 & \\ 0 & 3 & 5 & /\cdot \frac{2}{3} \\ \hline \end{array}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \\ 1 & 1 & 2 \\ 2 & -1 & -1 \\ \hline 1 & -2 & -3 \\ 0 & 3 & 5 \\ 0 & 3 & 5 \\ \hline & & \end{array} \quad \begin{array}{l} / \cdot (-1)\ / \cdot (-2) \\ + \\ + \end{array}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \\ 0 & 3 & 5 \\ \hline & & \end{array} \quad \begin{array}{l} + \\ / \cdot \frac{2}{3} \end{array}$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\} \qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \quad /\cdot(-1)\ /\cdot(-2) \\ 1 & 1 & 2 \quad + \\ 2 & -1 & -1 \quad + \\ \hline 1 & -2 & -3 \\ 0 & 3 & 5 \\ 0 & 3 & 5 \\ \hline & & \end{array} \qquad \begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \quad + \\ 0 & 3 & 5 \quad /\cdot \frac{2}{3} \\ \hline & & \\ 0 & 3 & 5 \end{array}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \\ 1 & 1 & 2 \\ 2 & -1 & -1 \\ \hline 1 & -2 & -3 \\ 0 & 3 & 5 \\ 0 & 3 & 5 \\ \hline & & \end{array} \quad \begin{array}{l} /\cdot(-1)\ /\cdot(-2) \\ + \\ + \\ \\ \\ \\ \end{array}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \\ 0 & 3 & 5 \\ \hline 1 & & \\ 0 & 3 & 5 \end{array} \quad \begin{array}{l} + \\ /\cdot \frac{2}{3} \\ \\ \\ \end{array}$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$V = \{(x, y, x+y) : x, y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$\boxed{\dim V = 2}$$

2. način: bez korištenja matrice prijelaza

$$(-3, 2, -1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

α_1	α_2		
1	-2	-3	$/\cdot(-1)$ $/\cdot(-2)$
1	1	2	$+$
2	-1	-1	$+$
1	-2	-3	
0	3	5	
0	3	5	

α_1	α_2		
1	-2	-3	$+$
0	3	5	$/\cdot\frac{2}{3}$
1	0		
0	3	5	

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \\ 1 & 1 & 2 \\ 2 & -1 & -1 \\ \hline 1 & -2 & -3 \\ 0 & 3 & 5 \\ 0 & 3 & 5 \\ \hline & & \end{array} \quad /\cdot(-1)\ /\cdot(-2)\quad + \quad +$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \\ 0 & 3 & 5 \\ \hline 1 & 0 & \frac{1}{3} \\ 0 & 3 & 5 \end{array} \quad + \quad /\cdot\frac{2}{3}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$ $\qquad V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

α_1	α_2		
1	-2	-3	$/\cdot(-1)\ /\cdot(-2)$
1	1	2	$+$
2	-1	-1	$+$
1	-2	-3	
0	3	5	
0	3	5	

α_1	α_2		
1	-2	-3	$+$
0	3	5	$/\cdot\frac{2}{3}$
1	0	$\frac{1}{3}$	$\rightsquigarrow \alpha_1 = \frac{1}{3}$
0	3	5	

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$$

$$\boxed{\dim V = 2}$$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \\ 1 & 1 & 2 \\ 2 & -1 & -1 \\ \hline 1 & -2 & -3 \\ 0 & 3 & 5 \\ 0 & 3 & 5 \\ \hline & & \end{array} \quad \begin{array}{l} /\cdot(-1)\ /\cdot(-2) \\ + \\ + \end{array}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \\ 0 & 3 & 5 \\ \hline 1 & 0 & \frac{1}{3} \\ 0 & 3 & 5 \end{array} \quad \begin{array}{l} + \\ /\cdot \frac{2}{3} \end{array} \qquad \rightsquigarrow \boxed{\alpha_1 = \frac{1}{3}}$$

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$$

$$\boxed{\dim V = 2}$$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \\ 1 & 1 & 2 \\ 2 & -1 & -1 \\ \hline 1 & -2 & -3 \\ 0 & 3 & 5 \\ 0 & 3 & 5 \\ \hline & & \end{array} \quad \begin{array}{l} /\cdot(-1)\ /\cdot(-2) \\ + \\ + \end{array}$$

$$\begin{array}{cc|c} \alpha_1 & \alpha_2 & \\ \hline 1 & -2 & -3 \\ 0 & 3 & 5 \\ \hline 1 & 0 & \frac{1}{3} \\ 0 & 3 & 5 \end{array} \quad \begin{array}{l} + \\ /\cdot \frac{2}{3} \end{array}$$

$$\boxed{\alpha_1 = \frac{1}{3}}$$

$$\alpha_2 = \frac{5}{3}$$

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x,y,x+y) : x,y \in \mathbb{R}\}$

$\boxed{\dim V = 2}$

2. način: bez korištenja matrice prijelaza

$$(-3,2,-1) = \alpha_1 \cdot (1,1,2) + \alpha_2 \cdot (-2,1,-1)$$

$$\left.\begin{aligned} \alpha_1 - 2\alpha_2 &= -3 \\ \alpha_1 + \alpha_2 &= 2 \\ 2\alpha_1 - \alpha_2 &= -1 \end{aligned}\right\}$$

$$\begin{array}{cc|cl} \alpha_1 & \alpha_2 & & \\ \hline 1 & -2 & -3 & /\cdot(-1)\ /\cdot(-2) \\ 1 & 1 & 2 & + \\ 2 & -1 & -1 & + \\ \hline 1 & -2 & -3 & \\ 0 & 3 & 5 & \\ 0 & 3 & 5 & \\ \hline & & & \end{array}$$

$$\begin{array}{cc|cl} \alpha_1 & \alpha_2 & & \\ \hline 1 & -2 & -3 & + \\ 0 & 3 & 5 & /\cdot \frac{2}{3} \\ \hline 1 & 0 & \frac{1}{3} & \rightsquigarrow \boxed{\alpha_1 = \frac{1}{3}} \\ 0 & 3 & 5 & \rightsquigarrow \boxed{\alpha_2 = \frac{5}{3}} \end{array}$$

Geometrijska interpretacija

$\mathcal{B}_1 = \big\{(1,0,1),\,(0,1,1)\big\}$

$V = \big\{(x,y,x+y) : x,y \in \mathbb{R}\big\}$

$\mathcal{B}_2 = \big\{(1,1,2),\,(-2,1,-1)\big\}$

Geometrijska interpretacija

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x, y, \boxed{x + y}) : x, y \in \mathbb{R}\}$

$z = x + y$

Geometrijska interpretacija

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$V = \{(x, y, \boxed{x+y}) : x, y \in \mathbb{R}\}$$

$$z = x + y$$

$$x + y - z = 0$$

Geometrijska interpretacija

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x, y, \boxed{x+y}) : x, y \in \mathbb{R}\}$

$z = x + y$

ravnina kroz ishodište $\longrightarrow x + y - z = 0$

Geometrijska interpretacija

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x, y, \boxed{x+y}) : x, y \in \mathbb{R}\}$

$z = x + y$

ravnina kroz ishodište $\longrightarrow x + y - z = 0$

- Potprostor V je ravnina kroz ishodište s jednadžbom $x + y - z = 0$.

Geometrijska interpretacija

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x, y, \boxed{x+y}) : x, y \in \mathbb{R}\}$

$z = x + y$

ravnina kroz ishodište $\longrightarrow x + y - z = 0$

- Potprostor V je ravnina kroz ishodište s jednadžbom $x + y - z = 0$.
- Potprostor V je skup svih rješenja homogenog sustava $x + y - z = 0$ koji se sastoji od jedne linearne jednadžbe s tri nepoznanice.

Geometrijska interpretacija

$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\}$

$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$

$V = \{(x, y, \boxed{x+y}) : x, y \in \mathbb{R}\}$

$z = x + y$

ravnina kroz ishodište $\longrightarrow x + y - z = 0$

- Potprostor V je ravnina kroz ishodište s jednadžbom $x + y - z = 0$.
- Potprostor V je skup svih rješenja homogenog sustava $x + y - z = 0$ koji se sastoji od jedne linearne jednadžbe s tri nepoznanice.
- Vektorska jednadžba ravnine s istaknutim vektorima iz baze $\mathcal{B}_1$

$$\vec{r} = u \cdot (1,0,1) + v \cdot (0,1,1), \quad u, v \in \mathbb{R}$$

Geometrijska interpretacija

$$\mathcal{B}_1 = \{(1,0,1),\ (0,1,1)\} \qquad V = \{(x, y, \boxed{x+y}) : x, y \in \mathbb{R}\}$$

$$\mathcal{B}_2 = \{(1,1,2),\ (-2,1,-1)\}$$

$$z = x + y$$

ravnina kroz ishodište $\longrightarrow$ $x + y - z = 0$

- Potprostor V je ravnina kroz ishodište s jednadžbom $x + y - z = 0$.
- Potprostor V je skup svih rješenja homogenog sustava $x + y - z = 0$ koji se sastoji od jedne linearne jednadžbe s tri nepoznanice.
- Vektorska jednadžba ravnine s istaknutim vektorima iz baze $\mathcal{B}_1$

$$\vec{r} = u \cdot (1,0,1) + v \cdot (0,1,1), \quad u, v \in \mathbb{R}$$

- Vektorska jednadžba ravnine s istaknutim vektorima iz baze $\mathcal{B}_2$

$$\vec{r} = u \cdot (1,1,2) + v \cdot (-2,1,-1), \quad u, v \in \mathbb{R}$$

Geometrijska interpretacija

- Je li U potprostor od $\mathbb{R}^3$?

$$U = \left\{(x, y, x + y + 1) : x, y \in \mathbb{R}\right\}$$

Geometrijska interpretacija

- Je li U potprostor od $\mathbb{R}^3$?

$$U = \left\{ (x, y, \boxed{x + y + 1}) : x, y \in \mathbb{R} \right\}$$

$$z = x + y + 1$$

Geometrijska interpretacija

- Je li U potprostor od $\mathbb{R}^3$?

$$U = \left\{(x, y, \boxed{x + y + 1}) : x, y \in \mathbb{R}\right\}$$

$$z = x + y + 1$$

$$x + y - z + 1 = 0$$

Geometrijska interpretacija

- Je li U potprostor od $\mathbb{R}^3$?

$$U = \{(x, y, \boxed{x + y + 1}) : x, y \in \mathbb{R}\}$$

$$z = x + y + 1$$

ravnina koja ne prolazi kroz ishodište $\longrightarrow$ $x + y - z + 1 = 0$

Geometrijska interpretacija

- Je li U potprostor od $\mathbb{R}^3$?

$$U = \{(x, y, \boxed{x + y + 1}) : x, y \in \mathbb{R}\}$$

$$z = x + y + 1$$

ravnina koja ne prolazi kroz ishodište $\longrightarrow$ $x + y - z + 1 = 0$

Skup U nije potprostor od $\mathbb{R}^3$ jer ne sadrži nulvektor.

Geometrijska interpretacija

- Je li U potprostor od $\mathbb{R}^3$?

$$U = \{(x, y, \boxed{x + y + 1}) : x, y \in \mathbb{R}\}$$

$$z = x + y + 1$$

ravnina koja ne prolazi kroz ishodište $\longrightarrow$ $x + y - z + 1 = 0$

Skup U nije potprostor od $\mathbb{R}^3$ jer ne sadrži nulvektor.

- U n-dimenzionalnom afinom prostoru k-ravnina je zadana s točkom i k linearno nezavisnih vektora.

Geometrijska interpretacija

- Je li U potprostor od $\mathbb{R}^3$?

$$U = \left\{(x, y, \boxed{x + y + 1}) : x, y \in \mathbb{R}\right\}$$

$$z = x + y + 1$$

ravnina koja ne prolazi kroz ishodište

$$x + y - z + 1 = 0$$

Skup U nije potprostor od $\mathbb{R}^3$ jer ne sadrži nulvektor.

- U n-dimenzionalnom afinom prostoru k-ravnina je zadana s točkom i k linearno nezavisnih vektora. Svaka k-ravnina je rješenje sustava od $n - k$ nezavisnih linearnih jednadžbi s n nepoznanica.

Geometrijska interpretacija

- Je li U potprostor od $\mathbb{R}^3$?

$$U = \{(x, y, \boxed{x + y + 1}) : x, y \in \mathbb{R}\}$$

$$z = x + y + 1$$

ravnina koja ne prolazi kroz ishodište

$$x + y - z + 1 = 0$$

Skup U nije potprostor od $\mathbb{R}^3$ jer ne sadrži nulvektor.

- U n-dimenzionalnom afinom prostoru k-ravnina je zadana s točkom i k linearno nezavisnih vektora. Svaka k-ravnina je rješenje sustava od $n - k$ nezavisnih linearnih jednadžbi s n nepoznanica.
- k-ravnina je potprostor jedino ako prolazi kroz ishodište, tj. ako sadrži nulvektor.

Geometrijska interpretacija

- Je li U potprostor od $\mathbb{R}^3$?

$$U = \{(x, y, \boxed{x + y + 1}) : x, y \in \mathbb{R}\}$$

$$z = x + y + 1$$

ravnina koja ne prolazi kroz ishodište

$$x + y - z + 1 = 0$$

Skup U nije potprostor od $\mathbb{R}^3$ jer ne sadrži nulvektor.

- U n-dimenzionalnom afinom prostoru k-ravnina je zadana s točkom i k linearno nezavisnih vektora. Svaka k-ravnina je rješenje sustava od $n - k$ nezavisnih linearnih jednadžbi s n nepoznanica.
- k-ravnina je potprostor jedino ako prolazi kroz ishodište, tj. ako sadrži nulvektor. Ravnine koje nisu potprostori zovemo **linearnim mnogostrukostima**.