Seminari 6

MATEMATIČKE METODE ZA INFORMATIČARE

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FOI, Varaždin

Sadržaj

prvi zadatak

drugi zadatak

treći zadatak

četvrti zadatak

prvi zadatak

Zadatak 1

U $\mathcal{P}_3(t)$ *zadani su polinomi*

$$p_1(t) = t^2 + t, \quad p_2(t) = t^2 - 2t + 3.$$

Prikažite, ako je moguće, polinome

$$p_3(t) = -t^2 + 8t - 9 \quad i \quad p_4(t) = t + 2$$

kao linearne kombinacije polinoma p_1 *i* p_2.

Rješenje

$$p_3(t) = \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)$$

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1	1	-1

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\end{array}$$

$$\begin{array}{cc|c}
\alpha_1 & \alpha_2 & \\
\hline
0 & 1 & -3
\end{array}$$

$$\left.\begin{array}{r}
\alpha_1 + \alpha_2 = -1 \\
\alpha_1 - 2\alpha_2 = 8 \\
3\alpha_2 = -9
\end{array}\right\}$$

Rješenje

$$p_3(t) = \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)$$

$$-t^2 + 8t - 9 = \alpha_1 \cdot (t^2 + t) + \alpha_2 \cdot (t^2 - 2t + 3)$$

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$$\begin{array}{cc|cl}
\alpha_1 & \alpha_2 & & \\ \hline
1 & 1 & -1 & \\
1 & -2 & 8 & \\
0 & 3 & -9 & /:3 \\ \hline
1 & 1 & -1 & \xleftarrow{+} \\
\textcircled{1} & -2 & 8 & /\cdot(-1) \\
0 & 1 & -3 & \\ \hline
0 & 3 & -9 & /:3 \\
1 & -2 & 8 & \\
0 & 1 & -3 & \\ \hline
 & & &
\end{array}$$

$$\begin{array}{cc|c}
\alpha_1 & \alpha_2 & \\ \hline
0 & 1 & -3 \\
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 & &
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\alpha_1 & \alpha_2 & & \\
\hline
1 & 1 & -1 & \\
1 & -2 & 8 & \\
0 & 3 & -9 & /:3 \\
\hline
1 & 1 & -1 & \overset{+}{\longleftarrow} \\
\textcircled{1} & -2 & 8 & /\cdot(-1) \\
0 & 1 & -3 & \\
\hline
0 & 3 & -9 & /:3 \\
1 & -2 & 8 & \\
0 & 1 & -3 & \\
\hline
 & & &
\end{array}
\qquad
\begin{array}{cc|c}
\alpha_1 & \alpha_2 & \\
\hline
0 & 1 & -3 \\
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\hline
 & & &
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\hline
0 & 1 & -3 \\
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 & & \\
 & & \\
 & &
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0 & 1 & -3 & \\ \hline
0 & 3 & -9 & /:3 \\
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 & & &
\end{array}$$

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\alpha_1 & \alpha_2 & \\ \hline
0 & 1 & -3 \\
1 & -2 & 8 \\
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 & &
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\hline
 & & &
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0 & 1 & -3 \\
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\alpha_1 & \alpha_2 & \\ \hline
0 & 1 & -3 \\
1 & -2 & 8 \\
0 & 1 & -3 \\ \hline
0 & \textcircled{1} & -3 \\
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1 & -2 & 8 & \\
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\hline
 & & &
\end{array}
\qquad
\begin{array}{cc|cl}
\alpha_1 & \alpha_2 & & \\
\hline
0 & 1 & -3 & \\
1 & -2 & 8 & \\
0 & 1 & -3 & \\
\hline
0 & \textcircled{1} & -3 & /\cdot 2 \\
1 & -2 & 8 & \\
\hline
 & & &
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\hline
 & & &
\end{array}
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0 & 1 & -3 & \\
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0 & 3 & -9 & /:3 \\
1 & -2 & 8 & \\
0 & 1 & -3 & \\ \hline
 & & &
\end{array}
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\begin{array}{cc|cl}
\alpha_1 & \alpha_2 & & \\ \hline
0 & 1 & -3 & \\
1 & -2 & 8 & \\
0 & 1 & -3 & \\ \hline
0 & \textcircled{1} & -3 & /\cdot 2 \\
1 & -2 & 8 & \leftarrow + \\ \hline
0 & 1 & -3 & \\
 & & &
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1 & 1 & -1 & \\
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1 & 1 & -1 & \leftarrow + \\
\textcircled{1} & -2 & 8 & /\cdot(-1) \\
0 & 1 & -3 & \\
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1 & -2 & 8 & \\
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\hline
 & & &
\end{array}
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\begin{array}{cc|cl}
\alpha_1 & \alpha_2 & & \\
\hline
0 & 1 & -3 & \\
1 & -2 & 8 & \\
0 & 1 & -3 & \\
\hline
0 & \textcircled{1} & -3 & /\cdot 2 \\
1 & -2 & 8 & \leftarrow + \\
\hline
0 & 1 & -3 & \\
1 & & &
\end{array}
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\alpha_1 & \alpha_2 & & \\
\hline
1 & 1 & -1 & \\
1 & -2 & 8 & \\
0 & 3 & -9 & / : 3 \\
\hline
1 & 1 & -1 & \overset{+}{\longleftarrow} \\
\textcircled{1} & -2 & 8 & / \cdot (-1) \\
0 & 1 & -3 & \\
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\hline
 & & &
\end{array}
\qquad
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\alpha_1 & \alpha_2 & & \\
\hline
0 & 1 & -3 & \\
1 & -2 & 8 & \\
0 & 1 & -3 & \\
\hline
0 & \textcircled{1} & -3 & / \cdot 2 \\
1 & -2 & 8 & \overset{+}{\longleftarrow} \\
\hline
0 & 1 & -3 & \\
1 & 0 & &
\end{array}
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\hline
1 & 1 & -1 & \xleftarrow{+} \\
\textcircled{1} & -2 & 8 & /\cdot(-1) \\
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\hline
 & & &
\end{array}
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\alpha_1 & \alpha_2 & & \\
\hline
0 & 1 & -3 & \\
1 & -2 & 8 & \\
0 & 1 & -3 & \\
\hline
0 & \textcircled{1} & -3 & /\cdot 2 \\
1 & -2 & 8 & \xleftarrow{+} \\
\hline
0 & 1 & -3 & \\
1 & 0 & 2 &
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1 & 1 & -1 & \\
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 & & &
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\alpha_1 & \alpha_2 & & \\ \hline
0 & 1 & -3 & \\
1 & -2 & 8 & \\
0 & 1 & -3 & \\ \hline
0 & \textcircled{1} & -3 & /\cdot 2 \\
1 & -2 & 8 & \leftarrow + \\ \hline
0 & 1 & -3 & \rightsquigarrow \alpha_2 = -3 \\
1 & 0 & 2 &
\end{array}$$

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1 & 1 & -1 & \\
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1 & -2 & 8 & \\
0 & 1 & -3 & \\ \hline
 & & &
\end{array}$$

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\alpha_1 & \alpha_2 & & \\ \hline
0 & 1 & -3 & \\
1 & -2 & 8 & \\
0 & 1 & -3 & \\ \hline
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1 & -2 & 8 & \leftarrow + \\ \hline
0 & 1 & -3 & \rightsquigarrow \boxed{\alpha_2 = -3} \\
1 & 0 & 2 &
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 & & &
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\hline
0 & 1 & -3 & \\
1 & -2 & 8 & \\
0 & 1 & -3 & \\
\hline
0 & \textcircled{1} & -3 & /\cdot 2 \\
1 & -2 & 8 & \xleftarrow{+} \\
\hline
0 & 1 & -3 & \rightsquigarrow \boxed{\alpha_2 = -3} \\
1 & 0 & 2 & \rightsquigarrow \alpha_1 = 2
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\hline
 & & &
\end{array}
\qquad
\begin{array}{cc|cl}
\alpha_1 & \alpha_2 & & \\
\hline
0 & 1 & -3 & \\
1 & -2 & 8 & \\
0 & 1 & -3 & \\
\hline
0 & \textcircled{1} & -3 & /\cdot 2 \\
1 & -2 & 8 & \leftarrow + \\
\hline
0 & 1 & -3 & \rightsquigarrow \boxed{\alpha_2 = -3} \\
1 & 0 & 2 & \rightsquigarrow \boxed{\alpha_1 = 2}
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0 & 3 & -9 & /:3 \\
\hline
1 & 1 & -1 & \xleftarrow{+} \\
\textcircled{1} & -2 & 8 & /\cdot(-1) \\
0 & 1 & -3 & \\
\hline
0 & 3 & -9 & /:3 \\
1 & -2 & 8 & \\
0 & 1 & -3 & \\
\hline
 & & &
\end{array}
\qquad
\begin{array}{cc|cl}
\alpha_1 & \alpha_2 & & \\
\hline
0 & 1 & -3 & \\
1 & -2 & 8 & \\
0 & 1 & -3 & \\
\hline
0 & \textcircled{1} & -3 & /\cdot 2 \\
1 & -2 & 8 & \xleftarrow{+} \\
\hline
0 & 1 & -3 & \rightsquigarrow \boxed{\alpha_2 = -3} \\
1 & 0 & 2 & \rightsquigarrow \boxed{\alpha_1 = 2}
\end{array}$$

$$\left.\begin{aligned}
\alpha_1 + \alpha_2 &= -1 \\
\alpha_1 - 2\alpha_2 &= 8 \\
3\alpha_2 &= -9
\end{aligned}\right\}$$

$$p_3(t) =$$

Rješenje

$$p_3(t) = \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)$$

$$-t^2 + 8t - 9 = \alpha_1 \cdot (t^2 + t) + \alpha_2 \cdot (t^2 - 2t + 3)$$

$$-t^2 + 8t - 9 = (\alpha_1 + \alpha_2)t^2 + (\alpha_1 - 2\alpha_2)t + 3\alpha_2$$

$$\left.\begin{aligned} \alpha_1 + \alpha_2 &= -1 \\ \alpha_1 - 2\alpha_2 &= 8 \\ 3\alpha_2 &= -9 \end{aligned}\right\}$$

$$\begin{array}{cc|cl}
\alpha_1 & \alpha_2 & & \\
\hline
1 & 1 & -1 & \\
1 & -2 & 8 & \\
0 & 3 & -9 & /:3 \\
\hline
1 & 1 & -1 & \xleftarrow{+} \\
\textcircled{1} & -2 & 8 & /\cdot(-1) \\
0 & 1 & -3 & \\
\hline
0 & 3 & -9 & /:3 \\
1 & -2 & 8 & \\
0 & 1 & -3 & \\
\hline
 & & &
\end{array}
\qquad
\begin{array}{cc|cl}
\alpha_1 & \alpha_2 & & \\
\hline
0 & 1 & -3 & \\
1 & -2 & 8 & \\
0 & 1 & -3 & \\
\hline
0 & \textcircled{1} & -3 & /\cdot 2 \\
1 & -2 & 8 & \xleftarrow{+} \\
\hline
0 & 1 & -3 & \rightsquigarrow \boxed{\alpha_2 = -3} \\
1 & 0 & 2 & \rightsquigarrow \boxed{\alpha_1 = 2}
\end{array}$$

$$p_3(t) = 2 \cdot p_1(t)$$

Rješenje

$$p_3(t) = \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)$$

$$-t^2 + 8t - 9 = \alpha_1 \cdot (t^2 + t) + \alpha_2 \cdot (t^2 - 2t + 3)$$

$$-t^2 + 8t - 9 = (\alpha_1 + \alpha_2)t^2 + (\alpha_1 - 2\alpha_2)t + 3\alpha_2$$

$$\begin{array}{cc|cl}
\alpha_1 & \alpha_2 & & \\
\hline
1 & 1 & -1 & \\
1 & -2 & 8 & \\
0 & 3 & -9 & /:3 \\
\hline
1 & 1 & -1 & \leftarrow + \\
\textcircled{1} & -2 & 8 & /\cdot(-1) \\
0 & 1 & -3 & \\
\hline
0 & 3 & -9 & /:3 \\
1 & -2 & 8 & \\
0 & 1 & -3 & \\
\hline
 & & &
\end{array}
\qquad
\begin{array}{cc|cl}
\alpha_1 & \alpha_2 & & \\
\hline
0 & 1 & -3 & \\
1 & -2 & 8 & \\
0 & 1 & -3 & \\
\hline
0 & \textcircled{1} & -3 & /\cdot 2 \\
1 & -2 & 8 & \leftarrow + \\
\hline
0 & 1 & -3 & \rightsquigarrow \boxed{\alpha_2 = -3} \\
1 & 0 & 2 & \rightsquigarrow \boxed{\alpha_1 = 2}
\end{array}$$

$$\left.\begin{aligned}
\alpha_1 + \alpha_2 &= -1 \\
\alpha_1 - 2\alpha_2 &= 8 \\
3\alpha_2 &= -9
\end{aligned}\right\}$$

$$p_3(t) = 2 \cdot p_1(t) - 3 \cdot p_2(t)$$

$$p_4(t) = \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)$$

$$p_4(t) = \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)$$

$t + 2 =$

$$p_4(t) = \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)$$

$$t + 2 = \alpha_1 \cdot (t^2 + t)$$

$$p_4(t) = \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)$$

$$t + 2 = \alpha_1 \cdot (t^2 + t) +$$

$$p_4(t) = \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)$$

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

$$p_4(t) = \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)$$

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

$$t + 2 =$$

$$p_4(t) = \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)$$

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

$$t + 2 = (\alpha_1 + \alpha_2)t^2$$

$$p_4(t) = \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)$$

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

$$t + 2 = (\alpha_1 + \alpha_2)t^2 +$$

$$
\begin{aligned}
p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\
t + 2 &= \alpha_1 \cdot (t^2 + t) + \alpha_2 \cdot (t^2 - 2t + 3) \\
t + 2 &= (\alpha_1 + \alpha_2)t^2 + (\alpha_1 - 2\alpha_2)t
\end{aligned}
$$

$$p_4(t) = \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)$$

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

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

$$p_4(t) = \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)$$

$$\alpha_1 + \alpha_2 = 0$$

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

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

$$p_4(t) = \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)$$

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

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

$$\begin{aligned} \alpha_1 + \alpha_2 &= 0 \\ \alpha_1 - 2\alpha_2 &= 1 \end{aligned}$$

$$
\begin{aligned}
p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\
t + 2 &= \alpha_1 \cdot (t^2 + t) + \alpha_2 \cdot (t^2 - 2t + 3) \\
t + 2 &= (\alpha_1 + \alpha_2)t^2 + (\alpha_1 - 2\alpha_2)t + 3\alpha_2
\end{aligned}
$$

$$
\begin{aligned}
\alpha_1 + \alpha_2 &= 0 \\
\alpha_1 - 2\alpha_2 &= 1 \\
3\alpha_2 &= 2
\end{aligned}
$$

$$\begin{aligned} p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\ t + 2 &= \alpha_1 \cdot (t^2 + t) + \alpha_2 \cdot (t^2 - 2t + 3) \\ t + 2 &= (\alpha_1 + \alpha_2)t^2 + (\alpha_1 - 2\alpha_2)t + 3\alpha_2 \end{aligned}$$

$$\left.\begin{aligned} \alpha_1 + \alpha_2 &= 0 \\ \alpha_1 - 2\alpha_2 &= 1 \\ 3\alpha_2 &= 2 \end{aligned}\right\}$$

$$\begin{aligned} p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\ t + 2 &= \alpha_1 \cdot (t^2 + t) + \alpha_2 \cdot (t^2 - 2t + 3) \\ t + 2 &= (\alpha_1 + \alpha_2)t^2 + (\alpha_1 - 2\alpha_2)t + 3\alpha_2 \end{aligned}$$

$$\left.\begin{aligned} \alpha_1 + \alpha_2 &= 0 \\ \alpha_1 - 2\alpha_2 &= 1 \\ 3\alpha_2 &= 2 \end{aligned}\right\}$$

α_1	α_2	

$$\begin{aligned} p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\ t + 2 &= \alpha_1 \cdot (t^2 + t) + \alpha_2 \cdot (t^2 - 2t + 3) \\ t + 2 &= (\alpha_1 + \alpha_2)t^2 + (\alpha_1 - 2\alpha_2)t + 3\alpha_2 \end{aligned}$$

$$\left.\begin{aligned} \alpha_1 + \alpha_2 &= 0 \\ \alpha_1 - 2\alpha_2 &= 1 \\ 3\alpha_2 &= 2 \end{aligned}\right\}$$

α_1	α_2	
1	1	0

$$
\begin{aligned}
p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\
t + 2 &= \alpha_1 \cdot (t^2 + t) + \alpha_2 \cdot (t^2 - 2t + 3) \\
t + 2 &= (\alpha_1 + \alpha_2)t^2 + (\alpha_1 - 2\alpha_2)t + 3\alpha_2
\end{aligned}
$$

$$
\left.
\begin{aligned}
\alpha_1 + \alpha_2 &= 0 \\
\alpha_1 - 2\alpha_2 &= 1 \\
3\alpha_2 &= 2
\end{aligned}
\right\}
$$

α_1	α_2	
1	1	0
1	-2	1

$$\begin{aligned} p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\ t + 2 &= \alpha_1 \cdot (t^2 + t) + \alpha_2 \cdot (t^2 - 2t + 3) \\ t + 2 &= (\alpha_1 + \alpha_2)t^2 + (\alpha_1 - 2\alpha_2)t + 3\alpha_2 \end{aligned}$$

$$\left.\begin{aligned} \alpha_1 + \alpha_2 &= 0 \\ \alpha_1 - 2\alpha_2 &= 1 \\ 3\alpha_2 &= 2 \end{aligned}\right\}$$

α_1	α_2	
1	1	0
1	-2	1
0	3	2

$$\begin{aligned} p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\ t + 2 &= \alpha_1 \cdot (t^2 + t) + \alpha_2 \cdot (t^2 - 2t + 3) \\ t + 2 &= (\alpha_1 + \alpha_2)t^2 + (\alpha_1 - 2\alpha_2)t + 3\alpha_2 \end{aligned}$$

$$\left.\begin{aligned} \alpha_1 + \alpha_2 &= 0 \\ \alpha_1 - 2\alpha_2 &= 1 \\ 3\alpha_2 &= 2 \end{aligned}\right\}$$

α_1	α_2	
1	1	0
1	-2	1
0	3	2

$$\begin{aligned} p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\ t + 2 &= \alpha_1 \cdot (t^2 + t) + \alpha_2 \cdot (t^2 - 2t + 3) \\ t + 2 &= (\alpha_1 + \alpha_2)t^2 + (\alpha_1 - 2\alpha_2)t + 3\alpha_2 \end{aligned}$$

$$\left.\begin{aligned} \alpha_1 + \alpha_2 &= 0 \\ \alpha_1 - 2\alpha_2 &= 1 \\ 3\alpha_2 &= 2 \end{aligned}\right\}$$

α_1	α_2	
①	1	0
1	-2	1
0	3	2

$$\begin{aligned} p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\ t+2 &= \alpha_1 \cdot (t^2+t) + \alpha_2 \cdot (t^2-2t+3) \\ t+2 &= (\alpha_1+\alpha_2)t^2 + (\alpha_1-2\alpha_2)t + 3\alpha_2 \end{aligned}$$

$$\left.\begin{aligned} \alpha_1+\alpha_2 &= 0 \\ \alpha_1-2\alpha_2 &= 1 \\ 3\alpha_2 &= 2 \end{aligned}\right\}$$

α_1	α_2		
$\textcircled{1}$	1	0	$/\cdot(-1)$
1	-2	1	
0	3	2	

$$
\begin{aligned}
p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\
t + 2 &= \alpha_1 \cdot (t^2 + t) + \alpha_2 \cdot (t^2 - 2t + 3) \\
t + 2 &= (\alpha_1 + \alpha_2)t^2 + (\alpha_1 - 2\alpha_2)t + 3\alpha_2
\end{aligned}
$$

$$
\left.
\begin{aligned}
\alpha_1 + \alpha_2 &= 0 \\
\alpha_1 - 2\alpha_2 &= 1 \\
3\alpha_2 &= 2
\end{aligned}
\right\}
$$

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

$$\begin{aligned} p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\ t+2 &= \alpha_1 \cdot (t^2+t) + \alpha_2 \cdot (t^2-2t+3) \\ t+2 &= (\alpha_1+\alpha_2)t^2 + (\alpha_1-2\alpha_2)t + 3\alpha_2 \end{aligned}$$

$$\left.\begin{aligned} \alpha_1+\alpha_2 &= 0 \\ \alpha_1-2\alpha_2 &= 1 \\ 3\alpha_2 &= 2 \end{aligned}\right\}$$

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

$$
\begin{aligned}
p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\
t + 2 &= \alpha_1 \cdot (t^2 + t) + \alpha_2 \cdot (t^2 - 2t + 3) \\
t + 2 &= (\alpha_1 + \alpha_2)t^2 + (\alpha_1 - 2\alpha_2)t + 3\alpha_2
\end{aligned}
$$

$$
\left.\begin{aligned}
\alpha_1 + \alpha_2 &= 0 \\
\alpha_1 - 2\alpha_2 &= 1 \\
3\alpha_2 &= 2
\end{aligned}\right\}
$$

$$
\begin{array}{cc|cl}
\alpha_1 & \alpha_2 & & \\
\hline
\textcircled{1} & 1 & 0 & /\cdot(-1) \\
1 & -2 & 1 & \hookleftarrow + \\
0 & 3 & 2 & \\
\hline
1 & 1 & 0 & \\
0 & & & \\
 & & & \\
\end{array}
$$

$$\begin{aligned} p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\ t + 2 &= \alpha_1 \cdot (t^2 + t) + \alpha_2 \cdot (t^2 - 2t + 3) \\ t + 2 &= (\alpha_1 + \alpha_2)t^2 + (\alpha_1 - 2\alpha_2)t + 3\alpha_2 \end{aligned}$$

$$\left.\begin{aligned} \alpha_1 + \alpha_2 &= 0 \\ \alpha_1 - 2\alpha_2 &= 1 \\ 3\alpha_2 &= 2 \end{aligned}\right\}$$

$$\begin{array}{cc|cl} \alpha_1 & \alpha_2 & & \\ \hline \textcircled{1} & 1 & 0 & /\cdot(-1) \\ 1 & -2 & 1 & \xleftarrow{\quad} + \\ 0 & 3 & 2 & \\ \hline 1 & 1 & 0 & \\ 0 & -3 & & \end{array}$$

$$\begin{aligned}p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)\\ t+2 &= \alpha_1 \cdot (t^2+t) + \alpha_2 \cdot (t^2-2t+3)\\ t+2 &= (\alpha_1+\alpha_2)t^2 + (\alpha_1-2\alpha_2)t + 3\alpha_2\end{aligned}$$

$$\left.\begin{aligned}\alpha_1+\alpha_2 &= 0\\ \alpha_1-2\alpha_2 &= 1\\ 3\alpha_2 &= 2\end{aligned}\right\}$$

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

$$\begin{aligned} p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\ t + 2 &= \alpha_1 \cdot (t^2 + t) + \alpha_2 \cdot (t^2 - 2t + 3) \\ t + 2 &= (\alpha_1 + \alpha_2)t^2 + (\alpha_1 - 2\alpha_2)t + 3\alpha_2 \end{aligned}$$

$$\left.\begin{aligned} \alpha_1 + \alpha_2 &= 0 \\ \alpha_1 - 2\alpha_2 &= 1 \\ 3\alpha_2 &= 2 \end{aligned}\right\}$$

$$\begin{array}{cc|cl} \alpha_1 & \alpha_2 & & \\ \hline \textcircled{1} & 1 & 0 & /\cdot(-1) \\ 1 & -2 & 1 & \leftarrow + \\ 0 & 3 & 2 & \\ \hline 1 & 1 & 0 & \\ 0 & -3 & 1 & \\ 0 & 3 & 2 & \\ & & & \end{array}$$

$$\begin{aligned} p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\ t + 2 &= \alpha_1 \cdot (t^2 + t) + \alpha_2 \cdot (t^2 - 2t + 3) \\ t + 2 &= (\alpha_1 + \alpha_2)t^2 + (\alpha_1 - 2\alpha_2)t + 3\alpha_2 \end{aligned}$$

$$\left.\begin{aligned} \alpha_1 + \alpha_2 &= 0 \\ \alpha_1 - 2\alpha_2 &= 1 \\ 3\alpha_2 &= 2 \end{aligned}\right\}$$

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

$$\begin{aligned} p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\ t+2 &= \alpha_1 \cdot (t^2+t) + \alpha_2 \cdot (t^2-2t+3) \\ t+2 &= (\alpha_1+\alpha_2)t^2 + (\alpha_1-2\alpha_2)t + 3\alpha_2 \end{aligned}$$

$$\left.\begin{aligned} \alpha_1 + \alpha_2 &= 0 \\ \alpha_1 - 2\alpha_2 &= 1 \\ 3\alpha_2 &= 2 \end{aligned}\right\}$$

$$\begin{array}{cc|cl}
\alpha_1 & \alpha_2 & & \\ \hline
\boxed{1} & 1 & 0 & /\cdot(-1) \\
1 & -2 & 1 & \leftarrow + \\
0 & 3 & 2 & \\ \hline
1 & 1 & 0 & \\
0 & \boxed{-3} & 1 & \\
0 & 3 & 2 & \\ \hline
 & & & \\
 & & & \\
\end{array}$$

$$\begin{aligned}
p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\
t+2 &= \alpha_1 \cdot (t^2+t) + \alpha_2 \cdot (t^2-2t+3) \\
t+2 &= (\alpha_1+\alpha_2)t^2 + (\alpha_1-2\alpha_2)t + 3\alpha_2
\end{aligned}$$

$$\left.\begin{aligned}
\alpha_1 + \alpha_2 &= 0 \\
\alpha_1 - 2\alpha_2 &= 1 \\
3\alpha_2 &= 2
\end{aligned}\right\}$$

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

$$\begin{aligned} p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\ t+2 &= \alpha_1 \cdot (t^2+t) + \alpha_2 \cdot (t^2-2t+3) \\ t+2 &= (\alpha_1+\alpha_2)t^2 + (\alpha_1-2\alpha_2)t + 3\alpha_2 \end{aligned}$$

$$\left.\begin{aligned} \alpha_1 + \alpha_2 &= 0 \\ \alpha_1 - 2\alpha_2 &= 1 \\ 3\alpha_2 &= 2 \end{aligned}\right\}$$

$$\begin{array}{cc|cl} \alpha_1 & \alpha_2 & & \\ \hline \textcircled{1} & 1 & 0 & /\cdot(-1) \\ 1 & -2 & 1 & \leftarrow + \\ 0 & 3 & 2 & \\ \hline 1 & 1 & 0 & \\ 0 & \textcircled{-3} & 1 & /\cdot 1 \\ 0 & 3 & 2 & \leftarrow + \\ \hline & & & \end{array}$$

$$\begin{aligned}
p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\
t + 2 &= \alpha_1 \cdot (t^2 + t) + \alpha_2 \cdot (t^2 - 2t + 3) \\
t + 2 &= (\alpha_1 + \alpha_2)t^2 + (\alpha_1 - 2\alpha_2)t + 3\alpha_2
\end{aligned}$$

$$\left.\begin{aligned}
\alpha_1 + \alpha_2 &= 0 \\
\alpha_1 - 2\alpha_2 &= 1 \\
3\alpha_2 &= 2
\end{aligned}\right\}$$

$$\begin{array}{cc|cl}
\alpha_1 & \alpha_2 & & \\
\hline
\enclose{circle}{1} & 1 & 0 & /\cdot(-1) \\
1 & -2 & 1 & \xleftarrow{+} \\
0 & 3 & 2 & \\
\hline
1 & 1 & 0 & \\
0 & \enclose{circle}{-3} & 1 & /\cdot 1 \;\Big/\cdot\frac{1}{3} \\
0 & 3 & 2 & \xleftarrow{+} \\
\hline
 & & &
\end{array}$$

$$\begin{aligned} p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\ t + 2 &= \alpha_1 \cdot (t^2 + t) + \alpha_2 \cdot (t^2 - 2t + 3) \\ t + 2 &= (\alpha_1 + \alpha_2)t^2 + (\alpha_1 - 2\alpha_2)t + 3\alpha_2 \end{aligned}$$

$$\left.\begin{aligned} \alpha_1 + \alpha_2 &= 0 \\ \alpha_1 - 2\alpha_2 &= 1 \\ 3\alpha_2 &= 2 \end{aligned}\right\}$$

$$\begin{array}{cc|cl}
\alpha_1 & \alpha_2 & & \\ \hline
\textcircled{1} & 1 & 0 & /\cdot(-1) \\
1 & -2 & 1 & \leftarrow + \\
0 & 3 & 2 & \\ \hline
1 & 1 & 0 & \leftarrow + \\
0 & \textcircled{-3} & 1 & /\cdot 1 \;\Big/ \cdot \frac{1}{3} \\
0 & 3 & 2 & \leftarrow + \\ \hline
 & & &
\end{array}$$

$$p_4(t) = \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)$$

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

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

$$\left.\begin{aligned} \alpha_1 + \alpha_2 &= 0 \\ \alpha_1 - 2\alpha_2 &= 1 \\ 3\alpha_2 &= 2 \end{aligned}\right\}$$

$$\begin{array}{cc|cl}
\alpha_1 & \alpha_2 & & \\
\hline
\boxed{1} & 1 & 0 & / \cdot (-1) \\
1 & -2 & 1 & \xleftarrow{+} \\
0 & 3 & 2 & \\
\hline
1 & 1 & 0 & \xleftarrow{+} \\
0 & \boxed{-3} & 1 & / \cdot 1 \;\Big/ \cdot \frac{1}{3} \\
0 & 3 & 2 & \xleftarrow{+} \\
\hline
 & & & \\
0 & -3 & 1 & \\
 & & &
\end{array}$$

$$p_4(t) = \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)$$

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

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

$$\left.\begin{aligned} \alpha_1 + \alpha_2 &= 0 \\ \alpha_1 - 2\alpha_2 &= 1 \\ 3\alpha_2 &= 2 \end{aligned}\right\}$$

$$\begin{array}{cc|cl}
\alpha_1 & \alpha_2 & & \\
\hline
\enclose{circle}{1} & 1 & 0 & /\cdot(-1) \\
1 & -2 & 1 & + \\
0 & 3 & 2 & \\
\hline
1 & 1 & 0 & + \\
0 & \enclose{circle}{-3} & 1 & /\cdot 1 \; / \cdot \frac{1}{3} \\
0 & 3 & 2 & + \\
\hline
 & & & \\
 & & & \\
0 & -3 & 1 & \\
0 & & &
\end{array}$$

$$\begin{aligned} p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\ t+2 &= \alpha_1 \cdot (t^2+t) + \alpha_2 \cdot (t^2-2t+3) \\ t+2 &= (\alpha_1+\alpha_2)t^2 + (\alpha_1-2\alpha_2)t + 3\alpha_2 \end{aligned}$$

$$\left.\begin{aligned} \alpha_1+\alpha_2 &= 0 \\ \alpha_1-2\alpha_2 &= 1 \\ 3\alpha_2 &= 2 \end{aligned}\right\}$$

$$\begin{array}{cc|cl}
\alpha_1 & \alpha_2 & & \\ \hline
\enclose{circle}{1} & 1 & 0 & /\cdot(-1) \\
1 & -2 & 1 & \leftarrow + \\
0 & 3 & 2 & \\ \hline
1 & 1 & 0 & \leftarrow + \\
0 & \enclose{circle}{-3} & 1 & /\cdot 1 \Big/ \cdot \frac{1}{3} \\
0 & 3 & 2 & \leftarrow + \\ \hline
 & & & \\
 & & & \\
0 & -3 & 1 & \\
0 & 0 & &
\end{array}$$

$$\begin{aligned} p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\ t+2 &= \alpha_1 \cdot (t^2+t) + \alpha_2 \cdot (t^2-2t+3) \\ t+2 &= (\alpha_1+\alpha_2)t^2 + (\alpha_1-2\alpha_2)t + 3\alpha_2 \end{aligned}$$

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$$\begin{array}{cc|cl}
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\hline
1 & 1 & 0 & \leftarrow + \\
0 & \boxed{-3} & 1 & /\cdot 1 \;\Big/ \cdot \frac{1}{3} \\
0 & 3 & 2 & \leftarrow + \\
\hline
 & & & \\
 & & & \\
0 & -3 & 1 & \\
0 & 0 & 3 &
\end{array}$$

$$
\begin{aligned}
p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\
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\end{aligned}
$$

$$
\left.
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3\alpha_2 &= 2
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$$

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0 & 3 & 2 & \\ \hline
1 & 1 & 0 & \xleftarrow{+} \\
0 & \textcircled{-3} & 1 & /\cdot 1 \quad /\cdot \frac{1}{3} \\
0 & 3 & 2 & \xleftarrow{+} \\ \hline
1 & & & \\
0 & -3 & 1 & \\
0 & 0 & 3 &
\end{array}
$$

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0 & 3 & 2 & \\
\hline
1 & 1 & 0 & \xleftarrow{} + \\
0 & \textcircled{-3} & 1 & / \cdot 1 \;\Big/ \cdot \frac{1}{3} \\
0 & 3 & 2 & \xleftarrow{} + \\
\hline
1 & 0 & & \\
0 & -3 & 1 & \\
0 & 0 & 3 &
\end{array}$$

$$p_4(t) = \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)$$

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

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\hline
1 & 1 & 0 & \leftarrow + \\
0 & \boxed{-3} & 1 & /\cdot 1 \;\; /\cdot\frac{1}{3} \\
0 & 3 & 2 & \leftarrow + \\
\hline
1 & 0 & \frac{1}{3} & \\
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$$p_4(t) = \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)$$

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0 & \enclose{circle}{-3} & 1 & /\cdot 1 \;\; /\cdot \frac{1}{3} \\
0 & 3 & 2 & \leftarrow + \\ \hline
1 & 0 & \frac{1}{3} & \\
0 & -3 & 1 & \\
\boxed{0} & \boxed{0} & \boxed{3} &
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$$\begin{aligned} p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\ t + 2 &= \alpha_1 \cdot (t^2 + t) + \alpha_2 \cdot (t^2 - 2t + 3) \\ t + 2 &= (\alpha_1 + \alpha_2)t^2 + (\alpha_1 - 2\alpha_2)t + 3\alpha_2 \end{aligned}$$

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0 & 3 & 2 & \leftarrow + \\
\hline
1 & 0 & \frac{1}{3} & \\
0 & -3 & 1 & \\
0 & 0 & 3 & \rightsquigarrow \boxed{0 = 3}
\end{array}$$

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1 & 0 & \frac{1}{3} & \\
0 & -3 & 1 & \\
\boxed{0 \quad 0} & & \boxed{3} & \rightsquigarrow \boxed{0=3}
\end{array}$$

Polinom p_4 se ne može napisati kao linearna kombinacija polinoma p_1 i p_2.

$$\begin{aligned} p_4(t) &= \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t) \\ t+2 &= \alpha_1 \cdot (t^2+t) + \alpha_2 \cdot (t^2-2t+3) \\ t+2 &= (\alpha_1+\alpha_2)t^2 + (\alpha_1-2\alpha_2)t + 3\alpha_2 \end{aligned}$$

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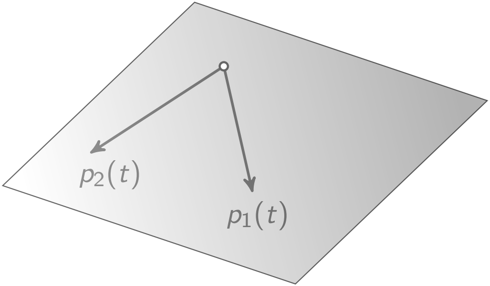
0 & 3 & 2 & \leftarrow + \\
\hline
1 & 0 & \frac{1}{3} & \\
0 & -3 & 1 & \\
\boxed{0 \quad 0} & & \boxed{3} & \rightsquigarrow \boxed{0=3}
\end{array}$$



Polinom p_4 se ne može napisati kao linearna kombinacija polinoma p_1 i p_2.

$$
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\hline
1 & 0 & \frac{1}{3} & \\
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0 & 0 & 3 & \rightsquigarrow \boxed{0 = 3}
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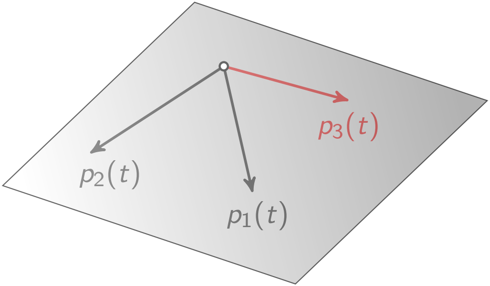
$$



Polinom p_4 se ne može napisati kao linearna kombinacija polinoma p_1 i p_2.

$$p_4(t) = \alpha_1 \cdot p_1(t) + \alpha_2 \cdot p_2(t)$$

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1 & 0 & \frac{1}{3} & \\
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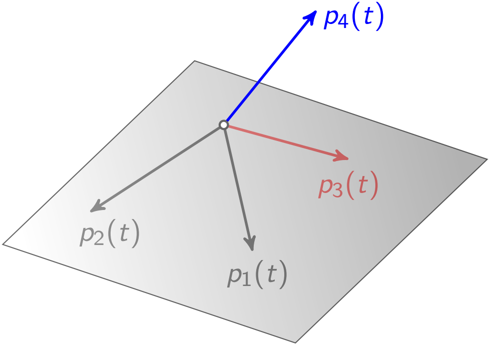

Polinom p_4 se ne može napisati kao linearna kombinacija polinoma p_1 i p_2.

drugi zadatak

Zadatak 2

U $\mathbb{R}^3$ *ispitajte linearnu nezavisnost vektora*

$$(2,1,2),\ (1,0,1),\ (-1,1,1),\ (4,-1,0)$$

i prikažite pojedini vektor kao linearnu kombinaciju preostalih kad god je to moguće.

Zadatak 2

U $\mathbb{R}^3$ *ispitajte linearnu nezavisnost vektora*

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Rješenje

$$\alpha_1 \cdot (2,1,2)$$

Zadatak 2

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$$(2,1,2),\ (1,0,1),\ (-1,1,1),\ (4,-1,0)$$

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Rješenje

$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1)$

Zadatak 2

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$$(2,1,2),\ (1,0,1),\ (-1,1,1),\ (4,-1,0)$$

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Rješenje

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1)$$

Zadatak 2

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Rješenje

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

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$$\big(2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4,$$

Zadatak 2

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$$\big(2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4,\ \alpha_1 + \alpha_3 - \alpha_4,$$

Zadatak 2

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Zadatak 2

U $\mathbb{R}^3$ *ispitajte linearnu nezavisnost vektora*

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$$\big(2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4,\ \alpha_1 + \alpha_3 - \alpha_4,\ 2\alpha_1 + \alpha_2 + \alpha_3\big) = (0, 0, 0)$$

Zadatak 2

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Zadatak 2

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$$\begin{aligned} 2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\ \alpha_1 + \alpha_3 - \alpha_4 &= 0 \end{aligned}$$

Zadatak 2

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$$\begin{aligned} 2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\ \alpha_1 + \alpha_3 - \alpha_4 &= 0 \\ 2\alpha_1 + \alpha_2 + \alpha_3 &= 0 \end{aligned}$$

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$$(2,1,2),\ (1,0,1),\ (-1,1,1),\ (4,-1,0)$$

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Rješenje

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$\big(2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4,\ \alpha_1 + \alpha_3 - \alpha_4,\ 2\alpha_1 + \alpha_2 + \alpha_3\big) = (0,0,0)$$

$$\left.\begin{aligned} 2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\ \alpha_1 + \alpha_3 - \alpha_4 &= 0 \\ 2\alpha_1 + \alpha_2 + \alpha_3 &= 0 \end{aligned}\right\}$$

α_1	α_2	α_3	α_4	

$$\begin{aligned} 2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\ \alpha_1 + \alpha_3 - \alpha_4 &= 0 \\ 2\alpha_1 + \alpha_2 + \alpha_3 &= 0 \end{aligned}$$

α_1	α_2	α_3	α_4	
2	1	-1	4	0

$$\begin{aligned} 2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\ \alpha_1 + \alpha_3 - \alpha_4 &= 0 \\ 2\alpha_1 + \alpha_2 + \alpha_3 &= 0 \end{aligned}$$

α_1	α_2	α_3	α_4	
2	1	-1	4	0
1	0	1	-1	0

$$\begin{aligned} 2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\ \alpha_1 + \alpha_3 - \alpha_4 &= 0 \\ 2\alpha_1 + \alpha_2 + \alpha_3 &= 0 \end{aligned}$$

α_1	α_2	α_3	α_4	
2	1	-1	4	0
1	0	1	-1	0
2	1	1	0	0

$$\begin{aligned} 2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\ \alpha_1 + \alpha_3 - \alpha_4 &= 0 \\ 2\alpha_1 + \alpha_2 + \alpha_3 &= 0 \end{aligned}$$

α_1	α_2	α_3	α_4	
2	1	-1	4	0
1	0	1	-1	0
2	1	1	0	0

$$\begin{aligned} 2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\ \alpha_1 + \alpha_3 - \alpha_4 &= 0 \\ 2\alpha_1 + \alpha_2 + \alpha_3 &= 0 \end{aligned}$$

α_1	α_2	α_3	α_4	
2	1	-1	4	0
1	0	1	$\boxed{-1}$	0
2	1	1	0	0

$$\begin{aligned} 2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\ \alpha_1 + \alpha_3 - \alpha_4 &= 0 \\ 2\alpha_1 + \alpha_2 + \alpha_3 &= 0 \end{aligned}$$

$$\begin{array}{cccc|cl} \alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline 2 & 1 & -1 & 4 & 0 & \\ 1 & 0 & 1 & \boxed{-1} & 0 & /\cdot 4 \\ 2 & 1 & 1 & 0 & 0 & \\ \hline \end{array}$$

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$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \boxed{-1} & 0 & / \cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
\end{array}$$

$$\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \boxed{-1} & 0 & / \cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\ \hline
 & & & & & \\
1 & 0 & 1 & -1 & 0 &
\end{array}$$

$$\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}$$

$$\begin{array}{cccc|c}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & \\
\hline
2 & 1 & -1 & 4 & 0 \\
1 & 0 & 1 & \boxed{-1} & 0 \\
2 & 1 & 1 & 0 & 0 \\
\hline
6 & & & & \\
1 & 0 & 1 & -1 & 0
\end{array}
\begin{array}{l}
\\
\xleftarrow{+} \\
/\cdot 4 \\
\\
\\
\\
\end{array}$$

$$\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}$$

$$\begin{array}{cccc|cl} \alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline 2 & 1 & -1 & 4 & 0 & \leftarrow + \\ 1 & 0 & 1 & \boxed{-1} & 0 & / \cdot 4 \\ 2 & 1 & 1 & 0 & 0 & \\ \hline 6 & 1 & & & & \\ 1 & 0 & 1 & -1 & 0 & \end{array}$$

$$\begin{aligned} 2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\ \alpha_1 + \alpha_3 - \alpha_4 &= 0 \\ 2\alpha_1 + \alpha_2 + \alpha_3 &= 0 \end{aligned}$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & / \cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & & & \\
1 & 0 & 1 & -1 & 0 &
\end{array}$$

$$\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}$$

$$\begin{array}{cccc|cl} \alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline 2 & 1 & -1 & 4 & 0 & \xleftarrow{+} \\ 1 & 0 & 1 & \boxed{-1} & 0 & /\cdot 4 \\ 2 & 1 & 1 & 0 & 0 & \\ \hline 6 & 1 & 3 & 0 & & \\ 1 & 0 & 1 & -1 & 0 & \end{array}$$

$$\begin{aligned} 2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\ \alpha_1 + \alpha_3 - \alpha_4 &= 0 \\ 2\alpha_1 + \alpha_2 + \alpha_3 &= 0 \end{aligned}$$

$$\begin{array}{cccc|cl} \alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline 2 & 1 & -1 & 4 & 0 & \leftarrow + \\ 1 & 0 & 1 & \enclose{circle}{-1} & 0 & /\cdot 4 \\ 2 & 1 & 1 & 0 & 0 & \\ \hline 6 & 1 & 3 & 0 & 0 & \\ 1 & 0 & 1 & -1 & 0 & \end{array}$$

$$\begin{aligned} 2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\ \alpha_1 + \alpha_3 - \alpha_4 &= 0 \\ 2\alpha_1 + \alpha_2 + \alpha_3 &= 0 \end{aligned}$$

$$
\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \xleftarrow{+} \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & / \cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 &
\end{array}
$$

$$
\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}
$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \boxed{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
\end{array}$$

$$\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}$$

α_1	α_2	α_3	α_4		
2	1	-1	4	0	$\leftarrow +$
1	0	1	$\boxed{-1}$	0	$/ \cdot 4$
2	1	1	0	0	
6	1	3	0	0	
1	0	1	-1	0	
2	$\boxed{1}$	1	0	0	

$$\begin{aligned} 2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\ \alpha_1 + \alpha_3 - \alpha_4 &= 0 \\ 2\alpha_1 + \alpha_2 + \alpha_3 &= 0 \end{aligned}$$

$$
\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \overset{+}{\curvearrowleft} \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & / \cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & -1 & 0 & \\
2 & \enclose{circle}{1} & 1 & 0 & 0 & / \cdot (-1) \\
\hline
\end{array}
$$

$$
\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}
$$

α_1	α_2	α_3	α_4		
2	1	-1	4	0	$+$
1	0	1	$\enclose{circle}{-1}$	0	$/\cdot 4$
2	1	1	0	0	
6	1	3	0	0	$+$
1	0	1	-1	0	
2	$\enclose{circle}{1}$	1	0	0	$/\cdot(-1)$

$$\begin{aligned} 2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\ \alpha_1 + \alpha_3 - \alpha_4 &= 0 \\ 2\alpha_1 + \alpha_2 + \alpha_3 &= 0 \end{aligned}$$

$$
\begin{array}{cccc|c|l}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \enclose{circle}{1} & 1 & 0 & 0 & /\cdot(-1) \\
\hline
 & & & & & \\
 & & & & & \\
2 & 1 & 1 & 0 & 0 & \\
 & & & & & \\
 & & & & &
\end{array}
$$

$$
\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0\\
\alpha_1 + \alpha_3 - \alpha_4 &= 0\\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}
$$

$$
\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \enclose{circle}{1} & 1 & 0 & 0 & /\cdot(-1) \\
\hline
 & & & & & \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 &
\end{array}
$$

$$
\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}
$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \boxed{-1} & 0 & / \cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\ \hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \boxed{1} & 1 & 0 & 0 & / \cdot (-1) \\ \hline
4 & & & & & \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 &
\end{array}$$

$$\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}$$

$$
\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \xleftarrow{+} \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \xleftarrow{+} \\
1 & 0 & 1 & -1 & 0 & \\
2 & \enclose{circle}{1} & 1 & 0 & 0 & /\cdot(-1) \\
\hline
4 & 0 & & & & \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 &
\end{array}
$$

$$
\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0\\
\alpha_1 + \alpha_3 - \alpha_4 &= 0\\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}
$$

$$
\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \boxed{-1} & 0 & / \cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\ \hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \boxed{1} & 1 & 0 & 0 & / \cdot (-1) \\ \hline
4 & 0 & 2 & & & \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
 & & & & &
\end{array}
$$

$$
\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}
$$

α_1	α_2	α_3	α_4		
2	1	-1	4	0	$\leftarrow +$
1	0	1	$\textcircled{-1}$	0	$/\cdot 4$
2	1	1	0	0	
6	1	3	0	0	$\leftarrow +$
1	0	1	-1	0	
2	$\textcircled{1}$	1	0	0	$/\cdot(-1)$
4	0	2	0		
1	0	1	-1	0	
2	1	1	0	0	

$$\begin{aligned} 2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\ \alpha_1 + \alpha_3 - \alpha_4 &= 0 \\ 2\alpha_1 + \alpha_2 + \alpha_3 &= 0 \end{aligned}$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline
2 & 1 & -1 & 4 & 0 & \xleftarrow{+} \\
1 & 0 & 1 & \boxed{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\ \hline
6 & 1 & 3 & 0 & 0 & \xleftarrow{+} \\
1 & 0 & 1 & -1 & 0 & \\
2 & \boxed{1} & 1 & 0 & 0 & /\cdot (-1) \\ \hline
4 & 0 & 2 & 0 & 0 & \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 &
\end{array}$$

$$\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & / \cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \enclose{circle}{1} & 1 & 0 & 0 & / \cdot (-1) \\
\hline
4 & 0 & 2 & 0 & 0 & \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
\end{array}$$

$$\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \boxed{-1} & 0 & / \cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \boxed{1} & 1 & 0 & 0 & / \cdot (-1) \\
\hline
4 & 0 & 2 & 0 & 0 & / : 2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
\end{array}$$

$$\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}$$

$$
\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \xleftarrow{+} \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \xleftarrow{+} \\
1 & 0 & 1 & -1 & 0 & \\
2 & \enclose{circle}{1} & 1 & 0 & 0 & /\cdot(-1) \\
\hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & 1 & 0 & 0 &
\end{array}
$$

$$
\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}
$$

$$
\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \enclose{circle}{1} & 1 & 0 & 0 & /\cdot(-1) \\
\hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & -1 & 0 &
\end{array}
$$

$$
\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}
$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \enclose{circle}{1} & 1 & 0 & 0 & /\cdot(-1) \\
\hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 &
\end{array}$$

$$\begin{aligned}
2\alpha_1+\alpha_2-\alpha_3+4\alpha_4&=0\\
\alpha_1+\alpha_3-\alpha_4&=0\\
2\alpha_1+\alpha_2+\alpha_3&=0
\end{aligned}$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \boxed{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\ \hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \boxed{1} & 1 & 0 & 0 & /\cdot (-1) \\ \hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\ \hline
2 & 0 & 1 & 0 & 0 & \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\ \hline
 & & & & &
\end{array}$$

$$\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \boxed{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\ \hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \boxed{1} & 1 & 0 & 0 & /\cdot (-1) \\ \hline
4 & 0 & 2 & 0 & 0 & /: 2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\ \hline
2 & 0 & \boxed{1} & 0 & 0 & \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\ \hline
\end{array}$$

$$\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}$$

$$
\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \xleftarrow{+} \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & / \cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \xleftarrow{+} \\
1 & 0 & 1 & -1 & 0 & \\
2 & \enclose{circle}{1} & 1 & 0 & 0 & / \cdot (-1) \\
\hline
4 & 0 & 2 & 0 & 0 & / : 2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & \enclose{circle}{1} & 0 & 0 & / \cdot (-1) \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
 & & & & &
\end{array}
$$

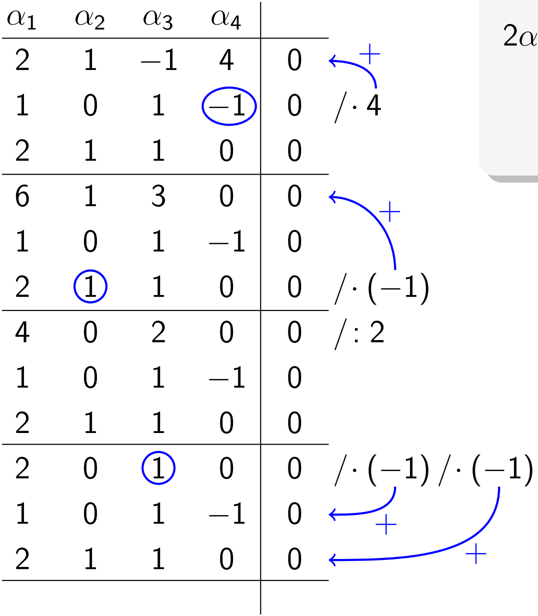
$$
\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}
$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline
2 & 1 & -1 & 4 & 0 & \xleftarrow{+} \\
1 & 0 & 1 & \boxed{-1} & 0 & / \cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\ \hline
6 & 1 & 3 & 0 & 0 & \xleftarrow{+} \\
1 & 0 & 1 & -1 & 0 & \\
2 & \boxed{1} & 1 & 0 & 0 & / \cdot (-1) \\ \hline
4 & 0 & 2 & 0 & 0 & / : 2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\ \hline
2 & 0 & \boxed{1} & 0 & 0 & / \cdot (-1) \\
1 & 0 & 1 & -1 & 0 & \xleftarrow{+} \\
2 & 1 & 1 & 0 & 0 & \\ \hline
 & & & & &
\end{array}$$

$$\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \xleftarrow{+} \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \xleftarrow{+} \\
1 & 0 & 1 & -1 & 0 & \\
2 & \enclose{circle}{1} & 1 & 0 & 0 & /\cdot(-1) \\
\hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & \enclose{circle}{1} & 0 & 0 & /\cdot(-1)\ /\cdot(-1) \\
1 & 0 & 1 & -1 & 0 & \xleftarrow{+} \\
2 & 1 & 1 & 0 & 0 & \\
\hline
\end{array}$$

$$\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}$$



$$
\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & / \cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \enclose{circle}{1} & 1 & 0 & 0 & / \cdot (-1) \\
\hline
4 & 0 & 2 & 0 & 0 & / : 2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & \enclose{circle}{1} & 0 & 0 & / \cdot (-1) \; / \cdot (-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\
\hline
\end{array}
$$

$$
\begin{aligned}
2\alpha_1 + \alpha_2 - \alpha_3 + 4\alpha_4 &= 0 \\
\alpha_1 + \alpha_3 - \alpha_4 &= 0 \\
2\alpha_1 + \alpha_2 + \alpha_3 &= 0
\end{aligned}
$$

$$
\begin{array}{cccc|c|l}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \boxed{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\ \hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \boxed{1} & 1 & 0 & 0 & /\cdot(-1) \\ \hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\ \hline
2 & 0 & \boxed{1} & 0 & 0 & /\cdot(-1)\ /\cdot(-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\ \hline
 & & & & &
\end{array}
\qquad
\begin{array}{cccc|c}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & \\ \hline
 & & & & \\
 & & & & \\
 & & & &
\end{array}
$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \boxed{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \boxed{1} & 1 & 0 & 0 & /\cdot(-1) \\
\hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & \boxed{1} & 0 & 0 & /\cdot(-1)\ /\cdot(-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\
\hline
 & & & & &
\end{array}$$

$$\begin{array}{cccc|c}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & \\
\hline
2 & 0 & 1 & 0 & 0 \\
 & & & & \\
 & & & &
\end{array}$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \textcircled{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \textcircled{1} & 1 & 0 & 0 & /\cdot(-1) \\
\hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & \textcircled{1} & 0 & 0 & /\cdot(-1)\ /\cdot(-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\
\hline
 & & & & &
\end{array}$$

$$\begin{array}{cccc|c}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & \\
\hline
2 & 0 & 1 & 0 & 0 \\
-1 & & & & \\
 & & & &
\end{array}$$

$$
\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \enclose{circle}{1} & 1 & 0 & 0 & /\cdot(-1) \\
\hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & \enclose{circle}{1} & 0 & 0 & /\cdot(-1)\ /\cdot(-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\
\hline
 & & & & &
\end{array}
$$

$$
\begin{array}{cccc|c}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & \\
\hline
2 & 0 & 1 & 0 & 0 \\
-1 & 0 & & & \\
 & & & &
\end{array}
$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \boxed{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \boxed{1} & 1 & 0 & 0 & /\cdot(-1) \\
\hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & \boxed{1} & 0 & 0 & /\cdot(-1)\ /\cdot(-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\
\hline
\end{array}$$

$$\begin{array}{cccc|c}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & \\
\hline
2 & 0 & 1 & 0 & 0 \\
-1 & 0 & 0 & & \\
 & & & & \\
\end{array}$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \textcircled{-1} & 0 & / \cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\ \hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \textcircled{1} & 1 & 0 & 0 & / \cdot (-1) \\ \hline
4 & 0 & 2 & 0 & 0 & / : 2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\ \hline
2 & 0 & \textcircled{1} & 0 & 0 & / \cdot (-1) \; / \cdot (-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\ \hline
 & & & & &
\end{array}$$

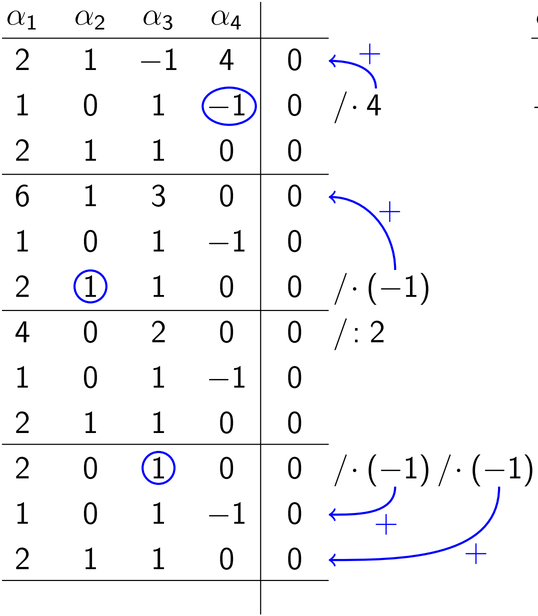
$$\begin{array}{cccc|c}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & \\ \hline
2 & 0 & 1 & 0 & 0 \\
-1 & 0 & 0 & -1 & \\
 & & & &
\end{array}$$

$$
\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \boxed{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \boxed{1} & 1 & 0 & 0 & /\cdot(-1) \\
\hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & \boxed{1} & 0 & 0 & /\cdot(-1)\;/\cdot(-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\
\hline
 & & & & &
\end{array}
$$

$$
\begin{array}{cccc|c}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & \\
\hline
2 & 0 & 1 & 0 & 0 \\
-1 & 0 & 0 & -1 & 0 \\
 & & & &
\end{array}
$$

α_1	α_2	α_3	α_4		
2	1	−1	4	0	+
1	0	1	$\boxed{-1}$	0	$/\cdot 4$
2	1	1	0	0	
6	1	3	0	0	+
1	0	1	−1	0	
2	$\boxed{1}$	1	0	0	$/\cdot(-1)$
4	0	2	0	0	$/:2$
1	0	1	−1	0	
2	1	1	0	0	
2	0	$\boxed{1}$	0	0	$/\cdot(-1)\ /\cdot(-1)$
1	0	1	−1	0	+
2	1	1	0	0	+

α_1	α_2	α_3	α_4	
2	0	1	0	0
−1	0	0	−1	0
0				



α_1	α_2	α_3	α_4		
2	1	-1	4	0	+
1	0	1	$\boxed{-1}$	0	$/ \cdot 4$
2	1	1	0	0	
6	1	3	0	0	+
1	0	1	-1	0	
2	$\boxed{1}$	1	0	0	$/ \cdot (-1)$
4	0	2	0	0	$/ : 2$
1	0	1	-1	0	
2	1	1	0	0	
2	0	$\boxed{1}$	0	0	$/ \cdot (-1)$ $/ \cdot (-1)$
1	0	1	-1	0	+
2	1	1	0	0	+

α_1	α_2	α_3	α_4	
2	0	1	0	0
-1	0	0	-1	0
0	1			

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline
2 & 1 & -1 & 4 & 0 & \xleftarrow{+} \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\ \hline
6 & 1 & 3 & 0 & 0 & \xleftarrow{+} \\
1 & 0 & 1 & -1 & 0 & \\
2 & \enclose{circle}{1} & 1 & 0 & 0 & /\cdot(-1) \\ \hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\ \hline
2 & 0 & \enclose{circle}{1} & 0 & 0 & /\cdot(-1)\;/\cdot(-1) \\
1 & 0 & 1 & -1 & 0 & \xleftarrow{+} \\
2 & 1 & 1 & 0 & 0 & \xleftarrow{+} \\ \hline
 & & & & &
\end{array}$$

$$\begin{array}{cccc|c}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & \\ \hline
2 & 0 & 1 & 0 & 0 \\
-1 & 0 & 0 & -1 & 0 \\
0 & 1 & 0 & &
\end{array}$$

$$
\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \boxed{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \boxed{1} & 1 & 0 & 0 & /\cdot(-1) \\
\hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & \boxed{1} & 0 & 0 & /\cdot(-1)\ /\cdot(-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\
\hline
 & & & & &
\end{array}
$$

$$
\begin{array}{cccc|c}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & \\
\hline
2 & 0 & 1 & 0 & 0 \\
-1 & 0 & 0 & -1 & 0 \\
0 & 1 & 0 & 0 &
\end{array}
$$

$$\begin{array}{cccc|c|l}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \boxed{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \boxed{1} & 1 & 0 & 0 & /\cdot(-1) \\
\hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & \boxed{1} & 0 & 0 & /\cdot(-1)\ /\cdot(-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\
\hline
 & & & & &
\end{array}$$

$$\begin{array}{cccc|c}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & \\
\hline
2 & 0 & 1 & 0 & 0 \\
-1 & 0 & 0 & -1 & 0 \\
0 & 1 & 0 & 0 & 0
\end{array}$$

$$
\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \enclose{circle}{1} & 1 & 0 & 0 & /\cdot(-1) \\
\hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & \enclose{circle}{1} & 0 & 0 & /\cdot(-1)\ /\cdot(-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\
\hline
 & & & & &
\end{array}
$$

$$
\begin{array}{cccc|c}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & \\
\hline
2 & 0 & 1 & 0 & 0 \\
-1 & 0 & 0 & -1 & 0 \\
0 & 1 & 0 & 0 & 0
\end{array}
$$

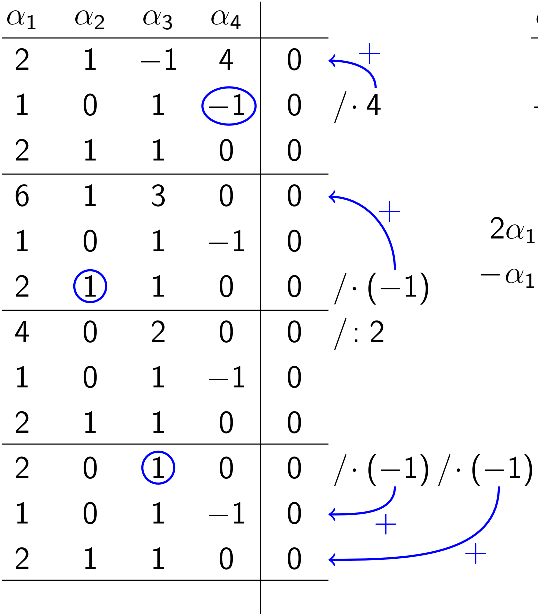
$$2\alpha_1 + \alpha_3 = 0$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \boxed{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \boxed{1} & 1 & 0 & 0 & /\cdot(-1) \\
\hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & \boxed{1} & 0 & 0 & /\cdot(-1)\ /\cdot(-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\
\hline
\end{array}$$

$$\begin{array}{cccc|c}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & \\
\hline
2 & 0 & 1 & 0 & 0 \\
-1 & 0 & 0 & -1 & 0 \\
0 & 1 & 0 & 0 & 0
\end{array}$$

$$2\alpha_1 + \alpha_3 = 0$$

$$-\alpha_1 - \alpha_4 = 0$$



$$
\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & + \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \enclose{circle}{1} & 1 & 0 & 0 & /\cdot(-1) \\
\hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & \enclose{circle}{1} & 0 & 0 & /\cdot(-1)\ /\cdot(-1) \\
1 & 0 & 1 & -1 & 0 & + \\
2 & 1 & 1 & 0 & 0 & + \\
\hline
 & & & & &
\end{array}
$$

$$
\begin{array}{cccc|c}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & \\
\hline
2 & 0 & 1 & 0 & 0 \\
-1 & 0 & 0 & -1 & 0 \\
0 & 1 & 0 & 0 & 0
\end{array}
$$

$$
\begin{aligned}
2\alpha_1 + \alpha_3 &= 0 \\
-\alpha_1 - \alpha_4 &= 0 \\
\alpha_2 &= 0
\end{aligned}
$$

$$
\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \textcircled{-1} & 0 & / \cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \textcircled{1} & 1 & 0 & 0 & / \cdot (-1) \\
\hline
4 & 0 & 2 & 0 & 0 & / : 2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & \textcircled{1} & 0 & 0 & / \cdot (-1) \; / \cdot (-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\
\hline
\end{array}
$$

$$
\begin{array}{cccc|c}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & \\
\hline
2 & 0 & 1 & 0 & 0 \\
-1 & 0 & 0 & -1 & 0 \\
0 & 1 & 0 & 0 & 0
\end{array}
$$

$$
\left.
\begin{aligned}
2\alpha_1 + \alpha_3 &= 0 \\
-\alpha_1 - \alpha_4 &= 0 \\
\alpha_2 &= 0
\end{aligned}
\right\}
$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \boxed{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\ \hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \boxed{1} & 1 & 0 & 0 & /\cdot(-1) \\ \hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\ \hline
2 & 0 & \boxed{1} & 0 & 0 & /\cdot(-1)\ /\cdot(-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\ \hline
 & & & & &
\end{array}$$

$$\begin{array}{cccc|c}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & \\ \hline
2 & 0 & 1 & 0 & 0 \\
-1 & 0 & 0 & -1 & 0 \\
0 & 1 & 0 & 0 & 0
\end{array}$$

$$\left.\begin{aligned}
2\alpha_1 + \alpha_3 &= 0 \\
-\alpha_1 - \alpha_4 &= 0 \\
\alpha_2 &= 0
\end{aligned}\right\}
\qquad
\left\{\begin{aligned}
\alpha_1 &= \\
\alpha_2 &= \\
\alpha_3 &= \\
\alpha_4 &=
\end{aligned}\right.$$

$$
\begin{array}{cccc|cl}
\boxed{\alpha_1} & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \textcircled{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \textcircled{1} & 1 & 0 & 0 & /\cdot(-1) \\
\hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & \textcircled{1} & 0 & 0 & /\cdot(-1)\ /\cdot(-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\
\hline
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\end{array}
$$

$$
\begin{array}{cccc|c}
\boxed{\alpha_1} & \alpha_2 & \alpha_3 & \alpha_4 & \\
\hline
2 & 0 & 1 & 0 & 0 \\
-1 & 0 & 0 & -1 & 0 \\
0 & 1 & 0 & 0 & 0
\end{array}
$$

$$
\left.\begin{aligned}
2\alpha_1 + \alpha_3 &= 0 \\
-\alpha_1 - \alpha_4 &= 0 \\
\alpha_2 &= 0
\end{aligned}\right\}
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\left\{\begin{aligned}
\alpha_1 &= \\
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\alpha_3 &= \\
\alpha_4 &=
\end{aligned}\right.
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$$\begin{array}{cccc|cl}
\boxed{\alpha_1} & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & / \cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \enclose{circle}{1} & 1 & 0 & 0 & / \cdot (-1) \\
\hline
4 & 0 & 2 & 0 & 0 & / : 2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & \enclose{circle}{1} & 0 & 0 & / \cdot (-1) \; / \cdot (-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\
\hline
 & & & & &
\end{array}$$

$$\begin{array}{cccc|c}
\boxed{\alpha_1} & \alpha_2 & \alpha_3 & \alpha_4 & \\
\hline
2 & 0 & 1 & 0 & 0 \\
-1 & 0 & 0 & -1 & 0 \\
0 & 1 & 0 & 0 & 0
\end{array}$$

$$\left.\begin{aligned}
2\alpha_1 + \alpha_3 &= 0 \\
-\alpha_1 - \alpha_4 &= 0 \\
\alpha_2 &= 0
\end{aligned}\right\}
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\left\{\begin{aligned}
\alpha_1 &= t \\
\alpha_2 &= \\
\alpha_3 &= \\
\alpha_4 &=
\end{aligned}\right.$$

$$
\begin{array}{cccc|cl}
\boxed{\alpha_1} & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \enclose{circle}{1} & 1 & 0 & 0 & /\cdot(-1) \\
\hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & \enclose{circle}{1} & 0 & 0 & /\cdot(-1)\ /\cdot(-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\
\hline
 & & & & &
\end{array}
$$

$$
\begin{array}{cccc|c}
\boxed{\alpha_1} & \alpha_2 & \alpha_3 & \alpha_4 & \\
\hline
2 & 0 & 1 & 0 & 0 \\
-1 & 0 & 0 & -1 & 0 \\
0 & 1 & 0 & 0 & 0
\end{array}
$$

$$
\left.\begin{aligned}
2\alpha_1 + \alpha_3 &= 0 \\
-\alpha_1 - \alpha_4 &= 0 \\
\alpha_2 &= 0
\end{aligned}\right\}
\qquad
\left\{\begin{aligned}
\alpha_1 &= t \\
\alpha_2 &= 0 \\
\alpha_3 &= \\
\alpha_4 &=
\end{aligned}\right.
$$

$$\begin{array}{cccc|c|l}
\boxed{\alpha_1} & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \textcircled{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\ \hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \textcircled{1} & 1 & 0 & 0 & /\cdot (-1) \\ \hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\ \hline
2 & 0 & \textcircled{1} & 0 & 0 & /\cdot (-1)\ /\cdot (-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\ \hline
 & & & & &
\end{array}$$

$$\begin{array}{cccc|c}
\boxed{\alpha_1} & \alpha_2 & \alpha_3 & \alpha_4 & \\ \hline
2 & 0 & 1 & 0 & 0 \\
-1 & 0 & 0 & -1 & 0 \\
0 & 1 & 0 & 0 & 0
\end{array}$$

$$\left.\begin{aligned} 2\alpha_1 + \alpha_3 &= 0 \\ -\alpha_1 - \alpha_4 &= 0 \\ \alpha_2 &= 0 \end{aligned}\right\} \qquad \left\{\begin{aligned} \alpha_1 &= t \\ \alpha_2 &= 0 \\ \alpha_3 &= -2t \\ \alpha_4 &= \end{aligned}\right.$$

$$
\begin{array}{cccc|cl}
\boxed{\alpha_1} & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \textcircled{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \textcircled{1} & 1 & 0 & 0 & /\cdot(-1) \\
\hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & \textcircled{1} & 0 & 0 & /\cdot(-1)\ /\cdot(-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\
\hline
 & & & & &
\end{array}
$$

$$
\begin{array}{cccc|c}
\boxed{\alpha_1} & \alpha_2 & \alpha_3 & \alpha_4 & \\
\hline
2 & 0 & 1 & 0 & 0 \\
-1 & 0 & 0 & -1 & 0 \\
0 & 1 & 0 & 0 & 0
\end{array}
$$

$$
\left.\begin{aligned}
2\alpha_1 + \alpha_3 &= 0 \\
-\alpha_1 - \alpha_4 &= 0 \\
\alpha_2 &= 0
\end{aligned}\right\}
\qquad
\left\{\begin{aligned}
\alpha_1 &= t \\
\alpha_2 &= 0 \\
\alpha_3 &= -2t \\
\alpha_4 &= -t
\end{aligned}\right.
$$

$$
\begin{array}{cccc|cl}
\boxed{\alpha_1} & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & /\cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\ \hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \enclose{circle}{1} & 1 & 0 & 0 & /\cdot(-1) \\ \hline
4 & 0 & 2 & 0 & 0 & /:2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\ \hline
2 & 0 & \enclose{circle}{1} & 0 & 0 & /\cdot(-1)\ /\cdot(-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\ \hline
 & & & & &
\end{array}
$$

$$
\begin{array}{cccc|c}
\boxed{\alpha_1} & \alpha_2 & \alpha_3 & \alpha_4 & \\ \hline
2 & 0 & 1 & 0 & 0 \\
-1 & 0 & 0 & -1 & 0 \\
0 & 1 & 0 & 0 & 0
\end{array}
$$

$$
\left.\begin{aligned}
2\alpha_1 + \alpha_3 &= 0 \\
-\alpha_1 - \alpha_4 &= 0 \\
\alpha_2 &= 0
\end{aligned}\right\}
\qquad
\begin{cases}
\alpha_1 = t \\
\alpha_2 = 0 \\
\alpha_3 = -2t \\
\alpha_4 = -t
\end{cases}
$$

$$t \in \mathbb{R}$$

$$
\begin{array}{cccc|cl}
\boxed{\alpha_1} & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
2 & 1 & -1 & 4 & 0 & \leftarrow + \\
1 & 0 & 1 & \enclose{circle}{-1} & 0 & / \cdot 4 \\
2 & 1 & 1 & 0 & 0 & \\
\hline
6 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 1 & -1 & 0 & \\
2 & \enclose{circle}{1} & 1 & 0 & 0 & / \cdot (-1) \\
\hline
4 & 0 & 2 & 0 & 0 & / : 2 \\
1 & 0 & 1 & -1 & 0 & \\
2 & 1 & 1 & 0 & 0 & \\
\hline
2 & 0 & \enclose{circle}{1} & 0 & 0 & / \cdot (-1) \; / \cdot (-1) \\
1 & 0 & 1 & -1 & 0 & \leftarrow + \\
2 & 1 & 1 & 0 & 0 & \leftarrow + \\
\hline
 & & & & &
\end{array}
$$

$$
\begin{array}{cccc|c}
\boxed{\alpha_1} & \alpha_2 & \alpha_3 & \alpha_4 & \\
\hline
2 & 0 & 1 & 0 & 0 \\
-1 & 0 & 0 & -1 & 0 \\
0 & 1 & 0 & 0 & 0
\end{array}
$$

$$
\left.\begin{aligned}
2\alpha_1 + \alpha_3 &= 0 \\
-\alpha_1 - \alpha_4 &= 0 \\
\alpha_2 &= 0
\end{aligned}\right\}
\qquad
\begin{cases}
\alpha_1 = t \\
\alpha_2 = 0 \\
\alpha_3 = -2t \\
\alpha_4 = -t
\end{cases}
$$

$$t \in \mathbb{R}$$

Kako dobiveni homogeni sustav linearnih jednadžbi ima i netrivijalnih rješenja, zadani vektori su linearno zavisni u $\mathbb{R}^3$.

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$\begin{cases} \alpha_1 = t \\ \alpha_2 = 0 \\ \alpha_3 = -2t \\ \alpha_4 = -t \end{cases}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \cdot (2,1,2)$

$$\begin{cases} \alpha_1 = t \\ \alpha_2 = 0 \\ \alpha_3 = -2t \\ \alpha_4 = -t \end{cases}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

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

$$\begin{cases} \alpha_1 = t \\ \alpha_2 = 0 \\ \alpha_3 = -2t \\ \alpha_4 = -t \end{cases}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1)$$

$$\begin{cases} \alpha_1 = t \\ \alpha_2 = 0 \\ \alpha_3 = -2t \\ \alpha_4 = -t \end{cases}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0)$$

$$\begin{cases} \alpha_1 = t \\ \alpha_2 = 0 \\ \alpha_3 = -2t \\ \alpha_4 = -t \end{cases}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$\begin{cases} \alpha_1 = t \\ \alpha_2 = 0 \\ \alpha_3 = -2t \\ \alpha_4 = -t \end{cases}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$\begin{cases} \alpha_1 = t \\ \alpha_2 = 0 \\ \alpha_3 = -2t \\ \alpha_4 = -t \end{cases}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$(2,1,2)$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1)$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1)$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0)$$

$$\alpha_1 \cdot (2, 1, 2) + \alpha_2 \cdot (1, 0, 1) + \alpha_3 \cdot (-1, 1, 1) + \alpha_4 \cdot (4, -1, 0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2, 1, 2) + 0 \cdot (1, 0, 1) + (-2t) \cdot (-1, 1, 1) + (-t) \cdot (4, -1, 0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2, 1, 2) + 0 \cdot (1, 0, 1) - 2 \cdot (-1, 1, 1) - 1 \cdot (4, -1, 0) = \Theta_{\mathbb{R}^3}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) =$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

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

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

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

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$\boxed{t = -\frac{1}{2}}$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$\boxed{t = -\frac{1}{2}}$

$$-\frac{1}{2} \cdot (2,1,2)$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$\boxed{t = -\frac{1}{2}}$

$$-\frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1)$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$\boxed{t = -\frac{1}{2}}$

$$-\frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) + (-1,1,1)$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$\boxed{t = -\frac{1}{2}}$

$$-\frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) + (-1,1,1) + \frac{1}{2} \cdot (4,-1,0)$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$\boxed{t = -\frac{1}{2}}$

$$-\frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) + (-1,1,1) + \frac{1}{2} \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$\boxed{t = -\frac{1}{2}}$

$$-\frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) + (-1,1,1) + \frac{1}{2} \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(-1,1,1) =$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$\boxed{t = -\frac{1}{2}}$

$$-\frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) + (-1,1,1) + \frac{1}{2} \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(-1,1,1) = \frac{1}{2} \cdot (2,1,2)$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$\boxed{t = -\frac{1}{2}}$

$$-\frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) + (-1,1,1) + \frac{1}{2} \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(-1,1,1) = \frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1)$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$\boxed{t = -\frac{1}{2}}$

$$-\frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) + (-1,1,1) + \frac{1}{2} \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(-1,1,1) = \frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) - \frac{1}{2} \cdot (4,-1,0)$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$\boxed{t = -\frac{1}{2}}$

$$-\frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) + (-1,1,1) + \frac{1}{2} \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(-1,1,1) = \frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) - \frac{1}{2} \cdot (4,-1,0)$$

$\boxed{t = -1}$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$\boxed{t = -\frac{1}{2}}$

$$-\frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) + (-1,1,1) + \frac{1}{2} \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(-1,1,1) = \frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) - \frac{1}{2} \cdot (4,-1,0)$$

$\boxed{t = -1}$

$$-1 \cdot (2,1,2)$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$\boxed{t = -\frac{1}{2}}$

$$-\frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) + (-1,1,1) + \frac{1}{2} \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(-1,1,1) = \frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) - \frac{1}{2} \cdot (4,-1,0)$$

$\boxed{t = -1}$

$$-1 \cdot (2,1,2) + 0 \cdot (1,0,1)$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$\boxed{t = -\frac{1}{2}}$

$$-\frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) + (-1,1,1) + \frac{1}{2} \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(-1,1,1) = \frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) - \frac{1}{2} \cdot (4,-1,0)$$

$\boxed{t = -1}$

$$-1 \cdot (2,1,2) + 0 \cdot (1,0,1) + 2 \cdot (-1,1,1)$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$\boxed{t = -\frac{1}{2}}$

$$-\frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) + (-1,1,1) + \frac{1}{2} \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(-1,1,1) = \frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) - \frac{1}{2} \cdot (4,-1,0)$$

$\boxed{t = -1}$

$$-1 \cdot (2,1,2) + 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + (4,-1,0)$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$\boxed{t = -\frac{1}{2}}$

$$-\frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) + (-1,1,1) + \frac{1}{2} \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(-1,1,1) = \frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) - \frac{1}{2} \cdot (4,-1,0)$$

$\boxed{t = -1}$

$$-1 \cdot (2,1,2) + 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$\boxed{t = -\frac{1}{2}}$

$$-\frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) + (-1,1,1) + \frac{1}{2} \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(-1,1,1) = \frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) - \frac{1}{2} \cdot (4,-1,0)$$

$\boxed{t = -1}$

$$-1 \cdot (2,1,2) + 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(4,-1,0) =$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$\boxed{t = -\frac{1}{2}}$

$$-\frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) + (-1,1,1) + \frac{1}{2} \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(-1,1,1) = \frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) - \frac{1}{2} \cdot (4,-1,0)$$

$\boxed{t = -1}$

$$-1 \cdot (2,1,2) + 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(4,-1,0) = 1 \cdot (2,1,2)$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$\boxed{t = -\frac{1}{2}}$

$$-\frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) + (-1,1,1) + \frac{1}{2} \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(-1,1,1) = \frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) - \frac{1}{2} \cdot (4,-1,0)$$

$\boxed{t = -1}$

$$-1 \cdot (2,1,2) + 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(4,-1,0) = 1 \cdot (2,1,2) + 0 \cdot (1,0,1)$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$\boxed{t = 1}$

$$(2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1) - 1 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(2,1,2) = 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + 1 \cdot (4,-1,0)$$

$\boxed{t = -\frac{1}{2}}$

$$-\frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) + (-1,1,1) + \frac{1}{2} \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(-1,1,1) = \frac{1}{2} \cdot (2,1,2) + 0 \cdot (1,0,1) - \frac{1}{2} \cdot (4,-1,0)$$

$\boxed{t = -1}$

$$-1 \cdot (2,1,2) + 0 \cdot (1,0,1) + 2 \cdot (-1,1,1) + (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$(4,-1,0) = 1 \cdot (2,1,2) + 0 \cdot (1,0,1) - 2 \cdot (-1,1,1)$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) =$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) = \beta_1 \cdot (2,1,2)$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1)$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

$$2\beta_1 - \beta_2 + 4\beta_3 = 1$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

$$\begin{aligned} 2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\ \beta_1 + \beta_2 - \beta_3 &= 0 \end{aligned}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

$$\begin{aligned} 2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\ \beta_1 + \beta_2 - \beta_3 &= 0 \\ 2\beta_1 + \beta_2 &= 1 \end{aligned}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

$$\left.\begin{aligned} 2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\ \beta_1 + \beta_2 - \beta_3 &= 0 \\ 2\beta_1 + \beta_2 &= 1 \end{aligned}\right\}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

β_1	β_2	β_3	

$$\left.\begin{aligned} 2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\ \beta_1 + \beta_2 - \beta_3 &= 0 \\ 2\beta_1 + \beta_2 &= 1 \end{aligned}\right\}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

β_1	β_2	β_3	
2	-1	4	1

$$\left.\begin{aligned} 2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\ \beta_1 + \beta_2 - \beta_3 &= 0 \\ 2\beta_1 + \beta_2 &= 1 \end{aligned}\right\}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

$$\begin{array}{ccc|c} \beta_1 & \beta_2 & \beta_3 & \\ \hline 2 & -1 & 4 & 1 \\ 1 & 1 & -1 & 0 \end{array}$$

$$\left.\begin{aligned} 2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\ \beta_1 + \beta_2 - \beta_3 &= 0 \\ 2\beta_1 + \beta_2 &= 1 \end{aligned}\right\}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

$$\begin{array}{ccc|c} \beta_1 & \beta_2 & \beta_3 & \\ \hline 2 & -1 & 4 & 1 \\ 1 & 1 & -1 & 0 \\ 2 & 1 & 0 & 1 \end{array}$$

$$\left.\begin{aligned} 2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\ \beta_1 + \beta_2 - \beta_3 &= 0 \\ 2\beta_1 + \beta_2 &= 1 \end{aligned}\right\}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

β_1	β_2	β_3	
2	-1	4	1
1	1	-1	0
2	1	0	1

$$\left.\begin{aligned} 2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\ \beta_1 + \beta_2 - \beta_3 &= 0 \\ 2\beta_1 + \beta_2 &= 1 \end{aligned}\right\}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

β_1	β_2	β_3	
2	-1	4	1
1	1	$\boxed{-1}$	0
2	1	0	1

$$\left.\begin{aligned} 2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\ \beta_1 + \beta_2 - \beta_3 &= 0 \\ 2\beta_1 + \beta_2 &= 1 \end{aligned}\right\}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \in \mathbb{R}$$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

$$\begin{array}{ccc|c}
\beta_1 & \beta_2 & \beta_3 & \\
\hline
2 & -1 & 4 & 1 \\
1 & 1 & \boxed{-1} & 0 \\
2 & 1 & 0 & 1 \\
\hline
 & & &
\end{array} \quad / \cdot 4$$

$$\left.\begin{aligned}
2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\
\beta_1 + \beta_2 - \beta_3 &= 0 \\
2\beta_1 + \beta_2 &= 1
\end{aligned}\right\}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \in \mathbb{R}$$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

$$\begin{array}{ccc|cl} \beta_1 & \beta_2 & \beta_3 & & \\ \hline 2 & -1 & 4 & 1 & \leftarrow + \\ 1 & 1 & \boxed{-1} & 0 & /\cdot 4 \\ 2 & 1 & 0 & 1 & \\ \hline & & & & \end{array}$$

$$\left.\begin{aligned} 2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\ \beta_1 + \beta_2 - \beta_3 &= 0 \\ 2\beta_1 + \beta_2 &= 1 \end{aligned}\right\}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

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2 & 1 & 0 & 1 & \\ \hline
 & & & & \\
1 & 1 & -1 & 0 &
\end{array}$$

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2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\
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\hline
6 & 3 & 0 & & \\
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 & & & &
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$$\left.\begin{aligned}
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 & & & &
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$$
\begin{array}{ccc|cl}
\beta_1 & \beta_2 & \beta_3 & & \\
\hline
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1 & 1 & \enclose{circle}{-1} & 0 & /\cdot 4 \\
2 & 1 & 0 & 1 & \\
\hline
6 & 3 & 0 & 1 & \\
1 & 1 & -1 & 0 & \\
2 & \enclose{circle}{1} & 0 & 1 & \\
\hline
 & & & &
\end{array}
$$

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2 & 1 & 0 & 1 & \\ \hline
6 & 3 & 0 & 1 & \\
1 & 1 & -1 & 0 & \\
2 & \boxed{1} & 0 & 1 & /\cdot(-1) \\ \hline
 & & & &
\end{array}$$

$$\left.\begin{aligned} 2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\ \beta_1 + \beta_2 - \beta_3 &= 0 \\ 2\beta_1 + \beta_2 &= 1 \end{aligned}\right\}$$

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\hline
6 & 3 & 0 & 1 & \\
1 & 1 & -1 & 0 & \xleftarrow{+} \\
2 & \boxed{1} & 0 & 1 & / \cdot (-1) \\
\hline
 & & & &
\end{array}$$

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$$\begin{array}{ccc|cl}
\beta_1 & \beta_2 & \beta_3 & & \\
\hline
2 & -1 & 4 & 1 & \overset{+}{\longleftarrow} \\
1 & 1 & \enclose{circle}{-1} & 0 & /\cdot 4 \\
2 & 1 & 0 & 1 & \\
\hline
6 & 3 & 0 & 1 & \\
1 & 1 & -1 & 0 & \overset{+}{\longleftarrow} \\
2 & \enclose{circle}{1} & 0 & 1 & /\cdot(-1)\;/\cdot(-3) \\
\hline
 & & & & \\
 & & & & \\
 & & & &
\end{array}$$

$$\left.\begin{aligned}
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2 & 1 & 0 & 1 & \\
\hline
6 & 3 & 0 & 1 & \leftarrow + \\
1 & 1 & -1 & 0 & \leftarrow + \\
2 & \boxed{1} & 0 & 1 & / \cdot (-1) \; / \cdot (-3) \\
\hline
 & & & &
\end{array}$$

$$\left.\begin{aligned}
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6 & 3 & 0 & 1 & \xleftarrow{+} \\
1 & 1 & -1 & 0 & \xleftarrow{+} \\
2 & \boxed{1} & 0 & 1 & /\cdot (-1) \ /\cdot (-3) \\ \hline
 & & & & \\
 & & & & \\
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2 & 1 & 0 & 1 & \\ \hline
6 & 3 & 0 & 1 & \leftarrow + \\
1 & 1 & -1 & 0 & \leftarrow + \\
2 & \enclose{circle}{1} & 0 & 1 & /\cdot(-1)\ /\cdot(-3) \\ \hline
 & & & & \\
-1 & & & & \\
2 & 1 & 0 & 1 &
\end{array}$$

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1 & 1 & -1 & 0 & \leftarrow + \\
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 & & & & \\
-1 & 0 & & & \\
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2 & 1 & 0 & 1 & \\
\hline
6 & 3 & 0 & 1 & \xleftarrow{+} \\
1 & 1 & -1 & 0 & \xleftarrow{+} \\
2 & \enclose{circle}{1} & 0 & 1 & / \cdot (-1) \; / \cdot (-3) \\
\hline
 & & & & \\
-1 & 0 & -1 & & \\
2 & 1 & 0 & 1 &
\end{array}$$

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1 & 1 & -1 & 0 & \xleftarrow{+} \\
2 & \boxed{1} & 0 & 1 & /\cdot(-1) \; /\cdot(-3) \\
\hline
 & & & & \\
-1 & 0 & -1 & -1 & \\
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1 & 1 & \enclose{circle}{-1} & 0 & /\cdot 4 \\
2 & 1 & 0 & 1 & \\ \hline
6 & 3 & 0 & 1 & \overset{+}{\longleftarrow} \\
1 & 1 & -1 & 0 & \overset{+}{\longleftarrow} \\
2 & \enclose{circle}{1} & 0 & 1 & /\cdot(-1)\ /\cdot(-3) \\ \hline
0 & & & & \\
-1 & 0 & -1 & -1 & \\
2 & 1 & 0 & 1 &
\end{array}$$

$$\left.\begin{aligned} 2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\ \beta_1 + \beta_2 - \beta_3 &= 0 \\ 2\beta_1 + \beta_2 &= 1 \end{aligned}\right\}$$

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6 & 3 & 0 & 1 & \leftarrow + \\
1 & 1 & -1 & 0 & \leftarrow + \\
2 & \enclose{circle}{1} & 0 & 1 & /\cdot(-1)\ /\cdot(-3) \\ \hline
0 & 0 & & & \\
-1 & 0 & -1 & -1 & \\
2 & 1 & 0 & 1 &
\end{array}$$

$$\left.\begin{aligned} 2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\ \beta_1 + \beta_2 - \beta_3 &= 0 \\ 2\beta_1 + \beta_2 &= 1 \end{aligned}\right\}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

$$\begin{array}{ccc|cl}
\beta_1 & \beta_2 & \beta_3 & & \\ \hline
2 & -1 & 4 & 1 & \leftarrow + \\
1 & 1 & \boxed{-1} & 0 & /\cdot 4 \\
2 & 1 & 0 & 1 & \\ \hline
6 & 3 & 0 & 1 & \leftarrow + \\
1 & 1 & -1 & 0 & \leftarrow + \\
2 & \boxed{1} & 0 & 1 & /\cdot(-1)\ /\cdot(-3) \\ \hline
0 & 0 & 0 & & \\
-1 & 0 & -1 & -1 & \\
2 & 1 & 0 & 1 &
\end{array}$$

$$\left.\begin{aligned} 2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\ \beta_1 + \beta_2 - \beta_3 &= 0 \\ 2\beta_1 + \beta_2 &= 1 \end{aligned}\right\}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

$$\begin{array}{ccc|c|l}
\beta_1 & \beta_2 & \beta_3 & & \\ \hline
2 & -1 & 4 & 1 & \leftarrow + \\
1 & 1 & \boxed{-1} & 0 & / \cdot 4 \\
2 & 1 & 0 & 1 & \\ \hline
6 & 3 & 0 & 1 & \leftarrow + \\
1 & 1 & -1 & 0 & \leftarrow + \\
2 & \boxed{1} & 0 & 1 & / \cdot (-1) \, / \cdot (-3) \\ \hline
0 & 0 & 0 & -2 & \\
-1 & 0 & -1 & -1 & \\
2 & 1 & 0 & 1 &
\end{array}$$

$$\left.\begin{aligned}
2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\
\beta_1 + \beta_2 - \beta_3 &= 0 \\
2\beta_1 + \beta_2 &= 1
\end{aligned}\right\}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

$$\begin{array}{ccc|cl}
\beta_1 & \beta_2 & \beta_3 & & \\
\hline
2 & -1 & 4 & 1 & \xleftarrow{+} \\
1 & 1 & \enclose{circle}{-1} & 0 & / \cdot 4 \\
2 & 1 & 0 & 1 & \\
\hline
6 & 3 & 0 & 1 & \xleftarrow{+} \\
1 & 1 & -1 & 0 & \xleftarrow{+} \\
2 & \enclose{circle}{1} & 0 & 1 & / \cdot (-1) \; / \cdot (-3) \\
\hline
\boxed{0} & \boxed{0} & \boxed{0} & \boxed{-2} & \\
-1 & 0 & -1 & -1 & \\
2 & 1 & 0 & 1 &
\end{array}$$

$$\left.\begin{aligned} 2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\ \beta_1 + \beta_2 - \beta_3 &= 0 \\ 2\beta_1 + \beta_2 &= 1 \end{aligned}\right\}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

$$\begin{array}{ccc|cl}
\beta_1 & \beta_2 & \beta_3 & & \\ \hline
2 & -1 & 4 & 1 & \overset{+}{\longleftarrow} \\
1 & 1 & \bigcirc\!\!\!\!-1 & 0 & /\cdot 4 \\
2 & 1 & 0 & 1 & \\ \hline
6 & 3 & 0 & 1 & \overset{+}{\longleftarrow} \\
1 & 1 & -1 & 0 & \overset{+}{\longleftarrow} \\
2 & \bigcirc\!\!\!\!1 & 0 & 1 & /\cdot(-1)\ /\cdot(-3) \\ \hline
0 & 0 & 0 & -2 & \rightsquigarrow \boxed{0 = -2} \\
-1 & 0 & -1 & -1 & \\
2 & 1 & 0 & 1 &
\end{array}$$

$$\left.\begin{aligned}
2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\
\beta_1 + \beta_2 - \beta_3 &= 0 \\
2\beta_1 + \beta_2 &= 1
\end{aligned}\right\}$$

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

$$\begin{array}{ccc|cl}
\beta_1 & \beta_2 & \beta_3 & & \\ \hline
2 & -1 & 4 & 1 & \xleftarrow{+} \\
1 & 1 & \bigcirc\!\!\!\!-1 & 0 & /\cdot 4 \\
2 & 1 & 0 & 1 & \\ \hline
6 & 3 & 0 & 1 & \xleftarrow{+} \\
1 & 1 & -1 & 0 & \xleftarrow{+} \\
2 & \bigcirc\!\!\!\!1 & 0 & 1 & /\cdot(-1)\ /\cdot(-3) \\ \hline
\boxed{0 \quad 0 \quad 0} & & & \boxed{-2} & \rightsquigarrow \boxed{0 = -2} \\
-1 & 0 & -1 & -1 & \\
2 & 1 & 0 & 1 &
\end{array}$$

$$\left.\begin{aligned}
2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\
\beta_1 + \beta_2 - \beta_3 &= 0 \\
2\beta_1 + \beta_2 &= 1
\end{aligned}\right\}$$

sustav nema rješenja

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

Vektor $(1,0,1)$ se ne može prikazati kao linearna kombinacija preostalih vektora.

$$\begin{array}{ccc|cl}
\beta_1 & \beta_2 & \beta_3 & & \\
\hline
2 & -1 & 4 & 1 & \leftarrow + \\
1 & 1 & \boxed{-1} & 0 & /\cdot 4 \\
2 & 1 & 0 & 1 & \\
\hline
6 & 3 & 0 & 1 & \leftarrow + \\
1 & 1 & -1 & 0 & \leftarrow + \\
2 & \boxed{1} & 0 & 1 & /\cdot(-1)\ /\cdot(-3) \\
\hline
0 & 0 & 0 & -2 & \rightsquigarrow \boxed{0=-2} \\
-1 & 0 & -1 & -1 & \\
2 & 1 & 0 & 1 &
\end{array}$$

$$\left.\begin{aligned} 2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\ \beta_1 + \beta_2 - \beta_3 &= 0 \\ 2\beta_1 + \beta_2 &= 1 \end{aligned}\right\}$$

sustav nema rješenja

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + 0 \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

Vektor $(1,0,1)$ se ne može prikazati kao linearna kombinacija preostalih vektora.

$$\begin{array}{ccc|cl}
\beta_1 & \beta_2 & \beta_3 & & \\ \hline
2 & -1 & 4 & 1 & \leftarrow + \\
1 & 1 & \enclose{circle}{-1} & 0 & /\cdot 4 \\
2 & 1 & 0 & 1 & \\ \hline
6 & 3 & 0 & 1 & \leftarrow + \\
1 & 1 & -1 & 0 & \leftarrow + \\
2 & \enclose{circle}{1} & 0 & 1 & /\cdot(-1)\ /\cdot(-3) \\ \hline
0 & 0 & 0 & -2 & \rightsquigarrow \boxed{0 = -2} \\
-1 & 0 & -1 & -1 & \\
2 & 1 & 0 & 1 &
\end{array}$$

$$\left.\begin{aligned} 2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\ \beta_1 + \beta_2 - \beta_3 &= 0 \\ 2\beta_1 + \beta_2 &= 1 \end{aligned}\right\}$$

sustav nema rješenja

$$\alpha_1 \cdot (2,1,2) + \alpha_2 \cdot (1,0,1) + \alpha_3 \cdot (-1,1,1) + \alpha_4 \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$$t \cdot (2,1,2) + \underset{\uparrow}{0} \cdot (1,0,1) + (-2t) \cdot (-1,1,1) + (-t) \cdot (4,-1,0) = \Theta_{\mathbb{R}^3}$$

$t \in \mathbb{R}$

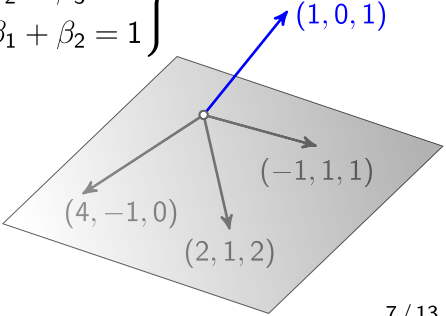
$$(1,0,1) = \beta_1 \cdot (2,1,2) + \beta_2 \cdot (-1,1,1) + \beta_3 \cdot (4,-1,0)$$

Vektor $(1,0,1)$ se ne može prikazati kao linearna kombinacija preostalih vektora.

$$\begin{array}{ccc|cl}
\beta_1 & \beta_2 & \beta_3 & & \\ \hline
2 & -1 & 4 & 1 & \leftarrow + \\
1 & 1 & \enclose{circle}{-1} & 0 & /\cdot 4 \\
2 & 1 & 0 & 1 & \\ \hline
6 & 3 & 0 & 1 & \leftarrow + \\
1 & 1 & -1 & 0 & \leftarrow + \\
2 & \enclose{circle}{1} & 0 & 1 & /\cdot(-1)\ /\cdot(-3) \\ \hline
0 & 0 & 0 & -2 & \rightsquigarrow \boxed{0=-2} \\
-1 & 0 & -1 & -1 & \\
2 & 1 & 0 & 1 &
\end{array}$$

$$\left.\begin{aligned} 2\beta_1 - \beta_2 + 4\beta_3 &= 1 \\ \beta_1 + \beta_2 - \beta_3 &= 0 \\ 2\beta_1 + \beta_2 &= 1 \end{aligned}\right\}$$

sustav nema rješenja



treći zadatak

Zadatak 3

U $\mathbb{R}^2$ *ispitajte linearnu nezavisnost vektora*

$$(1,1),\ (2,3),\ (1,0),\ (-2,1)$$

i prikažite pojedini vektor kao linearnu kombinaciju preostalih kad god je to moguće.

Rješenje

Rješenje

$$\alpha_1 \cdot (1, 1)$$

Rješenje

$$\alpha_1 \cdot (1, 1) + \alpha_2 \cdot (2, 3)$$

Rješenje

$$\alpha_1 \cdot (1, 1) + \alpha_2 \cdot (2, 3) + \alpha_3 \cdot (1, 0)$$

Rješenje

$$\alpha_1 \cdot (1, 1) + \alpha_2 \cdot (2, 3) + \alpha_3 \cdot (1, 0) + \alpha_4 \cdot (-2, 1)$$

Rješenje

$$\alpha_1 \cdot (1, 1) + \alpha_2 \cdot (2, 3) + \alpha_3 \cdot (1, 0) + \alpha_4 \cdot (-2, 1) = \Theta_{\mathbb{R}^2}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big)$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 = 0$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\begin{aligned} \alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\left.\begin{aligned} \alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 = 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 = 0 \end{aligned}\right\}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

α_1	α_2	α_3	α_4	

$$\left.\begin{aligned} \alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 = 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 = 0 \end{aligned}\right\}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

α_1	α_2	α_3	α_4	
1	2	1	-2	0

$$\left.\begin{aligned} \alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 = 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 = 0 \end{aligned}\right\}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

α_1	α_2	α_3	α_4	
1	2	1	-2	0
1	3	0	1	0

$$\left.\begin{aligned} \alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}\right\}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

α_1	α_2	α_3	α_4	
1	2	1	-2	0
1	3	0	1	0

$$\left.\begin{aligned} \alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}\right\}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

α_1	α_2	α_3	α_4	
1	2	1	-2	0
$\textcircled{1}$	3	0	1	0

$$\left.\begin{aligned} \alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}\right\}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
1 & 2 & 1 & -2 & 0 & \\
\textcircled{1} & 3 & 0 & 1 & 0 & /\cdot(-1) \\
\hline
 & & & & & \\
 & & & & &
\end{array}$$

$$\left.\begin{aligned} \alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}\right\}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\begin{array}{cccc|cl} \alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline 1 & 2 & 1 & -2 & 0 & \xleftarrow{\quad +\quad} \\ \textcircled{1} & 3 & 0 & 1 & 0 & /\cdot(-1) \\ \hline & & & & & \\ & & & & & \end{array}$$

$$\left.\begin{aligned} \alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}\right\}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
1 & 2 & 1 & -2 & 0 & \xleftarrow{+} \\
\textcircled{1} & 3 & 0 & 1 & 0 & /\cdot(-1) \\
\hline
 & & & & & \\
1 & 3 & 0 & 1 & 0 &
\end{array}$$

$$\left.\begin{aligned}
\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 &= 0 \\
\alpha_1 + 3\alpha_2 + \alpha_4 &= 0
\end{aligned}\right\}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
1 & 2 & 1 & -2 & 0 & \xleftarrow{\quad +} \\
\textcircled{1} & 3 & 0 & 1 & 0 & /\cdot(-1) \\
\hline
0 & & & & & \\
1 & 3 & 0 & 1 & 0 &
\end{array}$$

$$\left.\begin{aligned}
\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 &= 0 \\
\alpha_1 + 3\alpha_2 + \alpha_4 &= 0
\end{aligned}\right\}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline
1 & 2 & 1 & -2 & 0 & \xleftarrow{+} \\
\textcircled{1} & 3 & 0 & 1 & 0 & / \cdot (-1) \\ \hline
0 & -1 & & & & \\
1 & 3 & 0 & 1 & 0 &
\end{array}$$

$$\left.\begin{array}{r} \alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 = 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 = 0 \end{array}\right\}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
1 & 2 & 1 & -2 & 0 & \leftarrow + \\
\textcircled{1} & 3 & 0 & 1 & 0 & /\cdot(-1) \\
\hline
0 & -1 & 1 & & & \\
1 & 3 & 0 & 1 & 0 &
\end{array}$$

$$\left.\begin{aligned}
\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 &= 0 \\
\alpha_1 + 3\alpha_2 + \alpha_4 &= 0
\end{aligned}\right\}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
1 & 2 & 1 & -2 & 0 & \leftarrow + \\
\textcircled{1} & 3 & 0 & 1 & 0 & /\cdot(-1) \\
\hline
0 & -1 & 1 & -3 & & \\
1 & 3 & 0 & 1 & 0 &
\end{array}$$

$$\left.\begin{aligned} \alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}\right\}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
1 & 2 & 1 & -2 & 0 & \xleftarrow{+} \\
\textcircled{1} & 3 & 0 & 1 & 0 & /\cdot(-1) \\
\hline
0 & -1 & 1 & -3 & 0 & \\
1 & 3 & 0 & 1 & 0 &
\end{array}$$

$$\left.\begin{aligned} \alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}\right\}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\begin{array}{cccc|cl} \alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline 1 & 2 & 1 & -2 & 0 & \xleftarrow{+} \\ \textcircled{1} & 3 & 0 & 1 & 0 & /\cdot(-1) \\ \hline 0 & -1 & 1 & -3 & 0 & \\ 1 & 3 & 0 & 1 & 0 & \end{array}$$

$$\left.\begin{aligned} \alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}\right\}$$

$$-\alpha_2 + \alpha_3 - 3\alpha_4 = 0$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\ \hline
1 & 2 & 1 & -2 & 0 & \xleftarrow{+} \\
\textcircled{1} & 3 & 0 & 1 & 0 & /\cdot(-1) \\ \hline
0 & -1 & 1 & -3 & 0 & \\
1 & 3 & 0 & 1 & 0 &
\end{array}$$

$$\left.\begin{aligned} \alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}\right\}$$

$$\begin{aligned} -\alpha_2 + \alpha_3 - 3\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
1 & 2 & 1 & -2 & 0 & \xleftarrow{+} \\
\textcircled{1} & 3 & 0 & 1 & 0 & /\cdot(-1) \\
\hline
0 & -1 & 1 & -3 & 0 & \\
1 & 3 & 0 & 1 & 0 &
\end{array}$$

$$\left.\begin{aligned} \alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}\right\}$$

$$\left.\begin{aligned} -\alpha_2 + \alpha_3 - 3\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}\right\}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\begin{array}{cccc|cl}
\alpha_1 & \alpha_2 & \alpha_3 & \alpha_4 & & \\
\hline
1 & 2 & 1 & -2 & 0 & \xleftarrow{+} \\
\textcircled{1} & 3 & 0 & 1 & 0 & /\cdot(-1) \\
\hline
0 & -1 & 1 & -3 & 0 & \\
1 & 3 & 0 & 1 & 0 &
\end{array}$$

$$\left.\begin{aligned} \alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}\right\}$$

$$\left.\begin{aligned} -\alpha_2 + \alpha_3 - 3\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}\right\}$$

$$\begin{cases} \alpha_1 = \\ \alpha_2 = \\ \alpha_3 = \\ \alpha_4 = \end{cases}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\begin{array}{cccc|cl}
\alpha_1 & \boxed{\alpha_2} & \alpha_3 & \boxed{\alpha_4} & & \\ \hline
1 & 2 & 1 & -2 & 0 & \xleftarrow{+} \\
\enclose{circle}{1} & 3 & 0 & 1 & 0 & /\cdot(-1) \\ \hline
0 & -1 & 1 & -3 & 0 & \\
1 & 3 & 0 & 1 & 0 &
\end{array}$$

$$\left.\begin{array}{r}
\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 = 0 \\
\alpha_1 + 3\alpha_2 + \alpha_4 = 0
\end{array}\right\}$$

$$\left.\begin{array}{r}
-\alpha_2 + \alpha_3 - 3\alpha_4 = 0 \\
\alpha_1 + 3\alpha_2 + \alpha_4 = 0
\end{array}\right\}$$

$$\begin{cases}
\alpha_1 = \\
\alpha_2 = \\
\alpha_3 = \\
\alpha_4 =
\end{cases}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\begin{array}{cccc|cl}
\alpha_1 & \boxed{\alpha_2} & \alpha_3 & \boxed{\alpha_4} & & \\
\hline
1 & 2 & 1 & -2 & 0 & \xleftarrow{+} \\
\textcircled{1} & 3 & 0 & 1 & 0 & /\cdot(-1) \\
\hline
0 & -1 & 1 & -3 & 0 & \\
1 & 3 & 0 & 1 & 0 &
\end{array}$$

$$\left.\begin{aligned}
\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 &= 0 \\
\alpha_1 + 3\alpha_2 + \alpha_4 &= 0
\end{aligned}\right\}$$

$$\left.\begin{aligned}
-\alpha_2 + \alpha_3 - 3\alpha_4 &= 0 \\
\alpha_1 + 3\alpha_2 + \alpha_4 &= 0
\end{aligned}\right\}$$

$$\begin{cases}
\alpha_1 = \\
\alpha_2 = u \\
\alpha_3 = \\
\alpha_4 =
\end{cases}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\begin{array}{cccc|cl}
\alpha_1 & \boxed{\alpha_2} & \alpha_3 & \boxed{\alpha_4} & & \\
\hline
1 & 2 & 1 & -2 & 0 & \leftarrow + \\
\textcircled{1} & 3 & 0 & 1 & 0 & /\cdot(-1) \\
\hline
0 & -1 & 1 & -3 & 0 & \\
1 & 3 & 0 & 1 & 0 &
\end{array}$$

$$\left.\begin{aligned} \alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}\right\}$$

$$\left.\begin{aligned} -\alpha_2 + \alpha_3 - 3\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}\right\}$$

$$\begin{cases} \alpha_1 = \\ \alpha_2 = u \\ \alpha_3 = \\ \alpha_4 = v \end{cases}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\begin{array}{cccc|cl}
\alpha_1 & \boxed{\alpha_2} & \alpha_3 & \boxed{\alpha_4} & & \\
\hline
1 & 2 & 1 & -2 & 0 & \xleftarrow{+} \\
\textcircled{1} & 3 & 0 & 1 & 0 & /\cdot(-1) \\
\hline
0 & -1 & 1 & -3 & 0 & \\
1 & 3 & 0 & 1 & 0 &
\end{array}$$

$$\left.\begin{array}{r} \alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 = 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 = 0 \end{array}\right\}$$

$$\left.\begin{array}{r} -\alpha_2 + \alpha_3 - 3\alpha_4 = 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 = 0 \end{array}\right\}$$

$$\begin{cases} \alpha_1 = -3u - v \\ \alpha_2 = u \\ \alpha_3 = \\ \alpha_4 = v \end{cases}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\begin{array}{cccc|cl}
\alpha_1 & \boxed{\alpha_2} & \alpha_3 & \boxed{\alpha_4} & & \\
\hline
1 & 2 & 1 & -2 & 0 & \xleftarrow{+} \\
\textcircled{1} & 3 & 0 & 1 & 0 & /\cdot(-1) \\
\hline
0 & -1 & 1 & -3 & 0 & \\
1 & 3 & 0 & 1 & 0 &
\end{array}$$

$$\left.\begin{aligned}
\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 &= 0 \\
\alpha_1 + 3\alpha_2 + \alpha_4 &= 0
\end{aligned}\right\}$$

$$\left.\begin{aligned}
-\alpha_2 + \alpha_3 - 3\alpha_4 &= 0 \\
\alpha_1 + 3\alpha_2 + \alpha_4 &= 0
\end{aligned}\right\}$$

$$\begin{cases}
\alpha_1 = -3u - v \\
\alpha_2 = u \\
\alpha_3 = u + 3v \\
\alpha_4 = v
\end{cases}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\begin{array}{cccc|cl}
\alpha_1 & \boxed{\alpha_2} & \alpha_3 & \boxed{\alpha_4} & & \\
\hline
1 & 2 & 1 & -2 & 0 & \xleftarrow{\ +\ } \\
\enclose{circle}{1} & 3 & 0 & 1 & 0 & /\cdot(-1) \\
\hline
0 & -1 & 1 & -3 & 0 & \\
1 & 3 & 0 & 1 & 0 &
\end{array}$$

$$\left.\begin{aligned} \alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}\right\}$$

$$\left.\begin{aligned} -\alpha_2 + \alpha_3 - 3\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}\right\}$$

$$\begin{cases} \alpha_1 = -3u - v \\ \alpha_2 = u \\ \alpha_3 = u + 3v \\ \alpha_4 = v \end{cases} \qquad u, v \in \mathbb{R}$$

Rješenje

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\big(\alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4,\ \alpha_1 + 3\alpha_2 + \alpha_4\big) = (0,0)$$

$$\begin{array}{cccc|cl}
\alpha_1 & \boxed{\alpha_2} & \alpha_3 & \boxed{\alpha_4} & & \\
\hline
1 & 2 & 1 & -2 & 0 & \leftarrow + \\
\textcircled{1} & 3 & 0 & 1 & 0 & /\cdot(-1) \\
\hline
0 & -1 & 1 & -3 & 0 & \\
1 & 3 & 0 & 1 & 0 &
\end{array}$$

$$\left.\begin{aligned} \alpha_1 + 2\alpha_2 + \alpha_3 - 2\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}\right\}$$

$$\left.\begin{aligned} -\alpha_2 + \alpha_3 - 3\alpha_4 &= 0 \\ \alpha_1 + 3\alpha_2 + \alpha_4 &= 0 \end{aligned}\right\}$$

$$\begin{cases} \alpha_1 = -3u - v \\ \alpha_2 = u \\ \alpha_3 = u + 3v \\ \alpha_4 = v \end{cases} \qquad u, v \in \mathbb{R}$$

Kako dobiveni homogeni sustav linearnih jednadžbi ima i netrivijalnih rješenja, zadani vektori su linearno zavisni u $\mathbb{R}^2$.

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\begin{cases} \alpha_1 = -3u - v \\ \alpha_2 = u \\ \alpha_3 = u + 3v \\ \alpha_4 = v \end{cases}$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$(-3u - v) \cdot (1,1)$

$$\begin{cases} \alpha_1 = -3u - v \\ \alpha_2 = u \\ \alpha_3 = u + 3v \\ \alpha_4 = v \end{cases}$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$(-3u - v) \cdot (1,1) + u \cdot (2,3)$

$$\begin{cases} \alpha_1 = -3u - v \\ \alpha_2 = u \\ \alpha_3 = u + 3v \\ \alpha_4 = v \end{cases}$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot (2,3) + (u + 3v) \cdot (1,0)$$

$$\begin{cases} \alpha_1 = -3u - v \\ \alpha_2 = u \\ \alpha_3 = u + 3v \\ \alpha_4 = v \end{cases}$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot (2,3) + (u + 3v) \cdot (1,0) + v \cdot (-2,1)$$

$$\begin{cases} \alpha_1 = -3u - v \\ \alpha_2 = u \\ \alpha_3 = u + 3v \\ \alpha_4 = v \end{cases}$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot (2,3) + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\begin{cases} \alpha_1 = -3u - v \\ \alpha_2 = u \\ \alpha_3 = u + 3v \\ \alpha_4 = v \end{cases}$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot (2,3) + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$$\begin{cases} \alpha_1 = -3u - v \\ \alpha_2 = u \\ \alpha_3 = u + 3v \\ \alpha_4 = v \end{cases}$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$$\boxed{u = 1,\ v = 0}$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$$\boxed{u = 1,\ v = 0}$$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) =$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$\boxed{u = 1,\ v = 1}$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$\boxed{u = 1,\ v = 1}$

$$-4 \cdot (1,1)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$\boxed{u = 1,\ v = 1}$

$$-4 \cdot (1,1) + (2,3)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$$\boxed{u = 1,\ v = 0}$$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$$\boxed{u = 1,\ v = 1}$$

$$-4 \cdot (1,1) + (2,3) + 4 \cdot (1,0)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$\boxed{u = 1,\ v = 1}$

$$-4 \cdot (1,1) + (2,3) + 4 \cdot (1,0) + 1 \cdot (-2,1)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$\boxed{u = 1,\ v = 1}$

$$-4 \cdot (1,1) + (2,3) + 4 \cdot (1,0) + 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$\boxed{u = 1,\ v = 1}$

$$-4 \cdot (1,1) + (2,3) + 4 \cdot (1,0) + 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) =$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$\boxed{u = 1,\ v = 1}$

$$-4 \cdot (1,1) + (2,3) + 4 \cdot (1,0) + 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 4 \cdot (1,1)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$\boxed{u = 1,\ v = 1}$

$$-4 \cdot (1,1) + (2,3) + 4 \cdot (1,0) + 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 4 \cdot (1,1) - 4 \cdot (1,0)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$\boxed{u = 1,\ v = 1}$

$$-4 \cdot (1,1) + (2,3) + 4 \cdot (1,0) + 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 4 \cdot (1,1) - 4 \cdot (1,0) - 1 \cdot (-2,1)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$\boxed{u = 1,\ v = 1}$

$$-4 \cdot (1,1) + (2,3) + 4 \cdot (1,0) + 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 4 \cdot (1,1) - 4 \cdot (1,0) - 1 \cdot (-2,1)$$

$\boxed{u = 1,\ v = -1}$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$\boxed{u = 1,\ v = 1}$

$$-4 \cdot (1,1) + (2,3) + 4 \cdot (1,0) + 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 4 \cdot (1,1) - 4 \cdot (1,0) - 1 \cdot (-2,1)$$

$\boxed{u = 1,\ v = -1}$

$$-2 \cdot (1,1)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$\boxed{u = 1,\ v = 1}$

$$-4 \cdot (1,1) + (2,3) + 4 \cdot (1,0) + 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 4 \cdot (1,1) - 4 \cdot (1,0) - 1 \cdot (-2,1)$$

$\boxed{u = 1,\ v = -1}$

$$-2 \cdot (1,1) + (2,3)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$\boxed{u = 1,\ v = 1}$

$$-4 \cdot (1,1) + (2,3) + 4 \cdot (1,0) + 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 4 \cdot (1,1) - 4 \cdot (1,0) - 1 \cdot (-2,1)$$

$\boxed{u = 1,\ v = -1}$

$$-2 \cdot (1,1) + (2,3) - 2 \cdot (1,0)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$\boxed{u = 1,\ v = 1}$

$$-4 \cdot (1,1) + (2,3) + 4 \cdot (1,0) + 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 4 \cdot (1,1) - 4 \cdot (1,0) - 1 \cdot (-2,1)$$

$\boxed{u = 1,\ v = -1}$

$$-2 \cdot (1,1) + (2,3) - 2 \cdot (1,0) - 1 \cdot (-2,1)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$u, v \in \mathbb{R}$$

$$\boxed{u = 1,\ v = 0}$$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$$\boxed{u = 1,\ v = 1}$$

$$-4 \cdot (1,1) + (2,3) + 4 \cdot (1,0) + 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 4 \cdot (1,1) - 4 \cdot (1,0) - 1 \cdot (-2,1)$$

$$\boxed{u = 1,\ v = -1}$$

$$-2 \cdot (1,1) + (2,3) - 2 \cdot (1,0) - 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$\boxed{u = 1,\ v = 1}$

$$-4 \cdot (1,1) + (2,3) + 4 \cdot (1,0) + 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 4 \cdot (1,1) - 4 \cdot (1,0) - 1 \cdot (-2,1)$$

$\boxed{u = 1,\ v = -1}$

$$-2 \cdot (1,1) + (2,3) - 2 \cdot (1,0) - 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) =$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$\boxed{u = 1,\ v = 1}$

$$-4 \cdot (1,1) + (2,3) + 4 \cdot (1,0) + 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 4 \cdot (1,1) - 4 \cdot (1,0) - 1 \cdot (-2,1)$$

$\boxed{u = 1,\ v = -1}$

$$-2 \cdot (1,1) + (2,3) - 2 \cdot (1,0) - 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 2 \cdot (1,1)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$\boxed{u = 1,\ v = 1}$

$$-4 \cdot (1,1) + (2,3) + 4 \cdot (1,0) + 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 4 \cdot (1,1) - 4 \cdot (1,0) - 1 \cdot (-2,1)$$

$\boxed{u = 1,\ v = -1}$

$$-2 \cdot (1,1) + (2,3) - 2 \cdot (1,0) - 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 2 \cdot (1,1) + 2 \cdot (1,0)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$$\boxed{u = 1,\ v = 0}$$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$$\boxed{u = 1,\ v = 1}$$

$$-4 \cdot (1,1) + (2,3) + 4 \cdot (1,0) + 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 4 \cdot (1,1) - 4 \cdot (1,0) - 1 \cdot (-2,1)$$

$$\boxed{u = 1,\ v = -1}$$

$$-2 \cdot (1,1) + (2,3) - 2 \cdot (1,0) - 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 2 \cdot (1,1) + 2 \cdot (1,0) + 1 \cdot (-2,1)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$\boxed{u = 1,\ v = 0}$

$$-3 \cdot (1,1) + (2,3) + 1 \cdot (1,0) + 0 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 3 \cdot (1,1) - 1 \cdot (1,0) + 0 \cdot (-2,1)$$

$\boxed{u = 1,\ v = 1}$

$$-4 \cdot (1,1) + (2,3) + 4 \cdot (1,0) + 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 4 \cdot (1,1) - 4 \cdot (1,0) - 1 \cdot (-2,1)$$

$\boxed{u = 1,\ v = -1}$

$$-2 \cdot (1,1) + (2,3) - 2 \cdot (1,0) - 1 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(2,3) = 2 \cdot (1,1) + 2 \cdot (1,0) + 1 \cdot (-2,1)$$

$$\vdots$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$$(2,3) =$$

$$\alpha_1 \cdot (1, 1) + \alpha_2 \cdot (2, 3) + \alpha_3 \cdot (1, 0) + \alpha_4 \cdot (-2, 1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1, 1) + u \cdot \underline{\underline{(2, 3)}} + (u + 3v) \cdot (1, 0) + v \cdot (-2, 1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$$(2, 3) = \beta_1 \cdot (1, 1)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$$(2,3) = \beta_1 \cdot (1,1) + \beta_2 \cdot (1,0)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$$(2,3) = \beta_1 \cdot (1,1) + \beta_2 \cdot (1,0) + \beta_3 \cdot (-2,1)$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$$(2,3) = \beta_1 \cdot (1,1) + \beta_2 \cdot (1,0) + \beta_3 \cdot (-2,1)$$

$\beta_1 + \beta_2 - 2\beta_3 = 2$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$$(2,3) = \beta_1 \cdot (1,1) + \beta_2 \cdot (1,0) + \beta_3 \cdot (-2,1)$$

$$\begin{aligned} \beta_1 + \beta_2 - 2\beta_3 &= 2 \\ \beta_1 + \beta_3 &= 3 \end{aligned}$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

$$(2,3) = \beta_1 \cdot (1,1) + \beta_2 \cdot (1,0) + \beta_3 \cdot (-2,1)$$

$$\left.\begin{aligned} \beta_1 + \beta_2 - 2\beta_3 &= 2 \\ \beta_1 + \beta_3 &= 3 \end{aligned}\right\}$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

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β_1	β_2	β_3	

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$$\begin{array}{ccc|c} \beta_1 & \beta_2 & \beta_3 & \\ \hline 1 & 1 & -2 & 2 \\ & & & \\ & & & \end{array}$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

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β_1	β_2	β_3	
1	1	-2	2
1	0	1	3

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

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β_1	β_2	β_3	
1	1	-2	2
$\textcircled{1}$	0	1	3

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$$\begin{array}{ccc|cl} \beta_1 & \beta_2 & \beta_3 & & \\ \hline 1 & 1 & -2 & 2 & \\ \textcircled{1} & 0 & 1 & 3 & / \cdot (-1) \\ \hline & & & & \end{array}$$

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$$\begin{array}{ccc|cl}
\beta_1 & \beta_2 & \beta_3 & & \\
\hline
1 & 1 & -2 & 2 & \xleftarrow{\;+\;} \\
\enclose{circle}{1} & 0 & 1 & 3 & / \cdot (-1) \\
\hline
 & & & & \\
1 & 0 & 1 & 3 &
\end{array}$$

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$$\begin{array}{ccc|cl} \beta_1 & \beta_2 & \beta_3 & & \\ \hline 1 & 1 & -2 & 2 & \leftarrow + \\ \textcircled{1} & 0 & 1 & 3 & /\cdot(-1) \\ \hline 0 & & & & \\ 1 & 0 & 1 & 3 & \end{array}$$

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$$\begin{array}{ccc|cl}
\beta_1 & \beta_2 & \beta_3 & & \\
\hline
1 & 1 & -2 & 2 & \xleftarrow{+} \\
\textcircled{1} & 0 & 1 & 3 & /\cdot(-1) \\
\hline
0 & 1 & & & \\
1 & 0 & 1 & 3 &
\end{array}$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

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$$\begin{array}{ccc|cl} \beta_1 & \beta_2 & \beta_3 & & \\ \hline 1 & 1 & -2 & 2 & \xleftarrow{\;+\;} \\ \textcircled{1} & 0 & 1 & 3 & /\cdot(-1) \\ \hline 0 & 1 & -3 & & \\ 1 & 0 & 1 & 3 & \end{array}$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

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$$\begin{array}{ccc|cl} \beta_1 & \beta_2 & \beta_3 & & \\ \hline 1 & 1 & -2 & 2 & \xleftarrow{+} \\ \textcircled{1} & 0 & 1 & 3 & /\cdot(-1) \\ \hline 0 & 1 & -3 & -1 & \\ 1 & 0 & 1 & 3 & \end{array}$$

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$$\begin{array}{ccc|cl} \beta_1 & \beta_2 & \beta_3 & & \\ \hline 1 & 1 & -2 & 2 & \xleftarrow{+} \\ \textcircled{1} & 0 & 1 & 3 & /\cdot(-1) \\ \hline 0 & 1 & -3 & -1 & \\ 1 & 0 & 1 & 3 & \end{array}$$

$$\beta_2 - 3\beta_3 = -1$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

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$$\left.\begin{aligned} \beta_1 + \beta_2 - 2\beta_3 &= 2 \\ \beta_1 + \beta_3 &= 3 \end{aligned}\right\}$$

$$\begin{array}{ccc|cl}
\beta_1 & \beta_2 & \beta_3 & & \\ \hline
1 & 1 & -2 & 2 & \xleftarrow{+} \\
\textcircled{1} & 0 & 1 & 3 & /\cdot(-1) \\ \hline
0 & 1 & -3 & -1 & \\
1 & 0 & 1 & 3 &
\end{array}$$

$$\begin{aligned} \beta_2 - 3\beta_3 &= -1 \\ \beta_1 + \beta_3 &= 3 \end{aligned}$$

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$$\begin{array}{ccc|c} \beta_1 & \beta_2 & \beta_3 & \\ \hline 1 & 1 & -2 & 2 \\ \enclose{circle}{1} & 0 & 1 & 3 \\ \hline 0 & 1 & -3 & -1 \\ 1 & 0 & 1 & 3 \end{array} \begin{array}{l} \xleftarrow{\quad +\quad} \\ / \cdot (-1) \\ \\ \\ \end{array}$$

$$\left.\begin{aligned} \beta_2 - 3\beta_3 &= -1 \\ \beta_1 + \beta_3 &= 3 \end{aligned}\right\}$$

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$$\begin{array}{ccc|cl} \beta_1 & \beta_2 & \beta_3 & & \\ \hline 1 & 1 & -2 & 2 & \xleftarrow{+} \\ \textcircled{1} & 0 & 1 & 3 & /\cdot(-1) \\ \hline 0 & 1 & -3 & -1 & \\ 1 & 0 & 1 & 3 & \end{array}$$

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$$\begin{cases} \beta_1 = \\ \beta_2 = \\ \beta_3 = \end{cases}$$

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$$\begin{array}{ccc|cl}
\beta_1 & \beta_2 & \boxed{\beta_3} & & \\
\hline
1 & 1 & -2 & 2 & \leftarrow + \\
\textcircled{1} & 0 & 1 & 3 & /\cdot(-1) \\
\hline
0 & 1 & -3 & -1 & \\
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$$\left.\begin{aligned} \beta_1 + \beta_2 - 2\beta_3 &= 2 \\ \beta_1 + \beta_3 &= 3 \end{aligned}\right\}$$

$$\begin{array}{ccc|cl}
\beta_1 & \beta_2 & \boxed{\beta_3} & & \\
\hline
1 & 1 & -2 & 2 & \overset{+}{\longleftarrow} \\
\textcircled{1} & 0 & 1 & 3 & /\cdot(-1) \\
\hline
0 & 1 & -3 & -1 & \\
1 & 0 & 1 & 3 &
\end{array}$$

$$\left.\begin{aligned} \beta_2 - 3\beta_3 &= -1 \\ \beta_1 + \beta_3 &= 3 \end{aligned}\right\}$$

$$\begin{cases} \beta_1 = \\ \beta_2 = \\ \beta_3 = t \end{cases}$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

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$u, v \in \mathbb{R}$

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$$\left.\begin{aligned} \beta_1 + \beta_2 - 2\beta_3 &= 2 \\ \beta_1 + \beta_3 &= 3 \end{aligned}\right\}$$

$$\begin{array}{ccc|cl} \beta_1 & \beta_2 & \boxed{\beta_3} & & \\ \hline 1 & 1 & -2 & 2 & \xleftarrow{+} \\ \textcircled{1} & 0 & 1 & 3 & /\cdot(-1) \\ \hline 0 & 1 & -3 & -1 & \\ 1 & 0 & 1 & 3 & \end{array}$$

$$\left.\begin{aligned} \beta_2 - 3\beta_3 &= -1 \\ \beta_1 + \beta_3 &= 3 \end{aligned}\right\}$$

$$\begin{cases} \beta_1 = 3 - t \\ \beta_2 = \\ \beta_3 = t \end{cases}$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$$(-3u - v) \cdot (1,1) + u \cdot \underline{\underline{(2,3)}} + (u + 3v) \cdot (1,0) + v \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

$u, v \in \mathbb{R}$

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$$\begin{array}{ccc|cl}
\beta_1 & \beta_2 & \boxed{\beta_3} & & \\
\hline
1 & 1 & -2 & 2 & \xleftarrow{+} \\
\textcircled{1} & 0 & 1 & 3 & /\cdot(-1) \\
\hline
0 & 1 & -3 & -1 & \\
1 & 0 & 1 & 3 &
\end{array}$$

$$\left.\begin{aligned} \beta_2 - 3\beta_3 &= -1 \\ \beta_1 + \beta_3 &= 3 \end{aligned}\right\}$$

$$\begin{cases} \beta_1 = 3 - t \\ \beta_2 = -1 + 3t \\ \beta_3 = t \end{cases}$$

$$\alpha_1 \cdot (1,1) + \alpha_2 \cdot (2,3) + \alpha_3 \cdot (1,0) + \alpha_4 \cdot (-2,1) = \Theta_{\mathbb{R}^2}$$

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$u, v \in \mathbb{R}$

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$$(2,3) =$$

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$$\begin{array}{ccc|cl}
\beta_1 & \beta_2 & \boxed{\beta_3} & & \\ \hline
1 & 1 & -2 & 2 & \leftarrow + \\
\textcircled{1} & 0 & 1 & 3 & / \cdot (-1) \\ \hline
0 & 1 & -3 & -1 & \\
1 & 0 & 1 & 3 &
\end{array}$$

$$\left.\begin{aligned} \beta_2 - 3\beta_3 &= -1 \\ \beta_1 + \beta_3 &= 3 \end{aligned}\right\}$$

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$u, v \in \mathbb{R}$

$$(2,3) = \beta_1 \cdot (1,1) + \beta_2 \cdot (1,0) + \beta_3 \cdot (-2,1)$$

$$(2,3) = (3 - t) \cdot (1,1)$$

$$\left.\begin{aligned} \beta_1 + \beta_2 - 2\beta_3 &= 2 \\ \beta_1 + \beta_3 &= 3 \end{aligned}\right\}$$

$$\begin{array}{ccc|cl} \beta_1 & \beta_2 & \boxed{\beta_3} & & \\ \hline 1 & 1 & -2 & 2 & \xleftarrow{+} \\ \enclose{circle}{1} & 0 & 1 & 3 & /\cdot(-1) \\ \hline 0 & 1 & -3 & -1 & \\ 1 & 0 & 1 & 3 & \end{array}$$

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$$(2,3) = (3 - t) \cdot (1,1) + (-1 + 3t) \cdot (1,0)$$

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$$\begin{array}{ccc|cl} \beta_1 & \beta_2 & \boxed{\beta_3} & & \\ \hline 1 & 1 & -2 & 2 & \xleftarrow{+} \\ \textcircled{1} & 0 & 1 & 3 & / \cdot (-1) \\ \hline 0 & 1 & -3 & -1 & \\ 1 & 0 & 1 & 3 & \end{array}$$

$$\left.\begin{aligned} \beta_2 - 3\beta_3 &= -1 \\ \beta_1 + \beta_3 &= 3 \end{aligned}\right\}$$

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$$(2,3) = (3 - t) \cdot (1,1) + (-1 + 3t) \cdot (1,0) + t \cdot (-2,1)$$

$$\left.\begin{aligned} \beta_1 + \beta_2 - 2\beta_3 &= 2 \\ \beta_1 + \beta_3 &= 3 \end{aligned}\right\}$$

$$\begin{array}{ccc|cl} \beta_1 & \beta_2 & \boxed{\beta_3} & & \\ \hline 1 & 1 & -2 & 2 & \xleftarrow{+} \\ \enclose{circle}{1} & 0 & 1 & 3 & / \cdot (-1) \\ \hline 0 & 1 & -3 & -1 & \\ 1 & 0 & 1 & 3 & \end{array}$$

$$\left.\begin{aligned} \beta_2 - 3\beta_3 &= -1 \\ \beta_1 + \beta_3 &= 3 \end{aligned}\right\}$$

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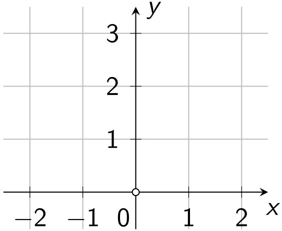

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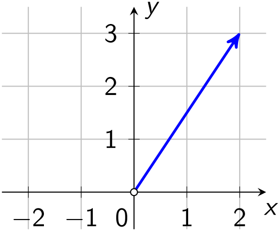

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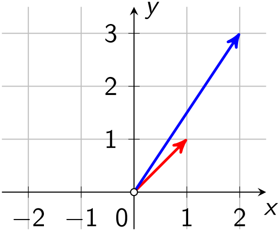

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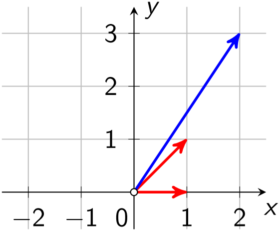
$+$

$/\cdot(-1)$

$$\left.\begin{aligned} \beta_2 - 3\beta_3 &= -1 \\ \beta_1 + \beta_3 &= 3 \end{aligned}\right\}$$



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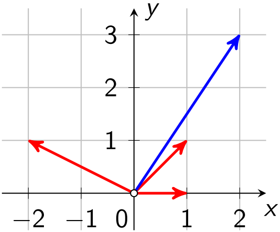
β_1	β_2	$\boxed{\beta_3}$	
1	1	-2	2
①	0	1	3
0	1	-3	-1
1	0	1	3

$+$

$/ \cdot (-1)$

$$\left.\begin{aligned} \beta_2 - 3\beta_3 &= -1 \\ \beta_1 + \beta_3 &= 3 \end{aligned}\right\}$$



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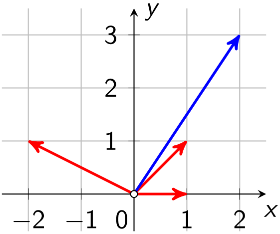

Svaki vektor iz zadanog skupa može se prikazati kao linearna kombinacija preostalih vektora, ali prikazi nisu jedinstveni zbog linearne zavisnosti preostalih vektora.

$$\begin{cases} \beta_1 = 3 - t \\ \beta_2 = -1 + 3t \\ \beta_3 = t \end{cases}$$

četvrti zadatak

Zadatak 4

Ispitajte jesu li sljedeće matrice linearno nezavisne u $M_2(\mathbb{R})$*:*

$$\begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix}, \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix}, \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix}, \begin{bmatrix} -2 & 0 \\ 3 & 0 \end{bmatrix}.$$

Zadatak 4

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Rješenje

$$\alpha \cdot \begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix}$$

Zadatak 4

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Rješenje

$$\alpha \cdot \begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix} + \beta \cdot \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix}$$

Zadatak 4

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$$\begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix}, \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix}, \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix}, \begin{bmatrix} -2 & 0 \\ 3 & 0 \end{bmatrix}.$$

Rješenje

$$\alpha \cdot \begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix} + \beta \cdot \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} + \gamma \cdot \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix}$$

Zadatak 4

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Rješenje

$$\alpha \cdot \begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix} + \beta \cdot \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} + \gamma \cdot \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix} + \delta \cdot \begin{bmatrix} -2 & 0 \\ 3 & 0 \end{bmatrix}$$

Zadatak 4

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Rješenje

$$\alpha \cdot \begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix} + \beta \cdot \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} + \gamma \cdot \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix} + \delta \cdot \begin{bmatrix} -2 & 0 \\ 3 & 0 \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$

Zadatak 4

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Rješenje

$$\alpha \cdot \begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix} + \beta \cdot \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} + \gamma \cdot \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix} + \delta \cdot \begin{bmatrix} -2 & 0 \\ 3 & 0 \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$

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

Zadatak 4

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Rješenje

$$\alpha \cdot \begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix} + \beta \cdot \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} + \gamma \cdot \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix} + \delta \cdot \begin{bmatrix} -2 & 0 \\ 3 & 0 \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$

$$\begin{bmatrix} 4\gamma - 2\delta & \\ & \end{bmatrix}$$

Zadatak 4

Ispitajte jesu li sljedeće matrice linearno nezavisne u $M_2(\mathbb{R})$*:*

$$\begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix}, \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix}, \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix}, \begin{bmatrix} -2 & 0 \\ 3 & 0 \end{bmatrix}.$$

Rješenje

$$\alpha \cdot \begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix} + \beta \cdot \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} + \gamma \cdot \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix} + \delta \cdot \begin{bmatrix} -2 & 0 \\ 3 & 0 \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$

$$\begin{bmatrix} 4\gamma - 2\delta & 3\alpha + \beta + 3\gamma \\ & \end{bmatrix}$$

Zadatak 4

Ispitajte jesu li sljedeće matrice linearno nezavisne u $M_2(\mathbb{R})$:

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Rješenje

$$\alpha \cdot \begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix} + \beta \cdot \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} + \gamma \cdot \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix} + \delta \cdot \begin{bmatrix} -2 & 0 \\ 3 & 0 \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$

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$$\alpha \cdot \begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix} + \beta \cdot \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} + \gamma \cdot \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix} + \delta \cdot \begin{bmatrix} -2 & 0 \\ 3 & 0 \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$

$$\begin{bmatrix} 4\gamma - 2\delta & 3\alpha + \beta + 3\gamma \\ \alpha + \gamma + 3\delta & \alpha + 3\gamma \end{bmatrix}$$

Zadatak 4

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Rješenje

$$\alpha \cdot \begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix} + \beta \cdot \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} + \gamma \cdot \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix} + \delta \cdot \begin{bmatrix} -2 & 0 \\ 3 & 0 \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$

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Rješenje

$$\alpha \cdot \begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix} + \beta \cdot \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} + \gamma \cdot \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix} + \delta \cdot \begin{bmatrix} -2 & 0 \\ 3 & 0 \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$

$$\begin{bmatrix} 4\gamma - 2\delta & 3\alpha + \beta + 3\gamma \\ \alpha + \gamma + 3\delta & \alpha + 3\gamma \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix} \qquad 4\gamma - 2\delta = 0$$

Zadatak 4

Ispitajte jesu li sljedeće matrice linearno nezavisne u $M_2(\mathbb{R})$:

$$\begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix}, \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix}, \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix}, \begin{bmatrix} -2 & 0 \\ 3 & 0 \end{bmatrix}.$$

Rješenje

$$\alpha \cdot \begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix} + \beta \cdot \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} + \gamma \cdot \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix} + \delta \cdot \begin{bmatrix} -2 & 0 \\ 3 & 0 \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$

$$\begin{bmatrix} 4\gamma - 2\delta & 3\alpha + \beta + 3\gamma \\ \alpha + \gamma + 3\delta & \alpha + 3\gamma \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix} \qquad \begin{aligned} 4\gamma - 2\delta &= 0 \\ 3\alpha + \beta + 3\gamma &= 0 \end{aligned}$$

Zadatak 4

Ispitajte jesu li sljedeće matrice linearno nezavisne u $M_2(\mathbb{R})$:

$$\begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix}, \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix}, \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix}, \begin{bmatrix} -2 & 0 \\ 3 & 0 \end{bmatrix}.$$

Rješenje

$$\alpha \cdot \begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix} + \beta \cdot \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} + \gamma \cdot \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix} + \delta \cdot \begin{bmatrix} -2 & 0 \\ 3 & 0 \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$

$$\begin{bmatrix} 4\gamma - 2\delta & 3\alpha + \beta + 3\gamma \\ \alpha + \gamma + 3\delta & \alpha + 3\gamma \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$

$$\begin{aligned} 4\gamma - 2\delta &= 0 \\ 3\alpha + \beta + 3\gamma &= 0 \\ \alpha + \gamma + 3\delta &= 0 \end{aligned}$$

Zadatak 4

Ispitajte jesu li sljedeće matrice linearno nezavisne u $M_2(\mathbb{R})$:

$$\begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix}, \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix}, \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix}, \begin{bmatrix} -2 & 0 \\ 3 & 0 \end{bmatrix}.$$

Rješenje

$$\alpha \cdot \begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix} + \beta \cdot \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} + \gamma \cdot \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix} + \delta \cdot \begin{bmatrix} -2 & 0 \\ 3 & 0 \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$

$$\begin{bmatrix} 4\gamma - 2\delta & 3\alpha + \beta + 3\gamma \\ \alpha + \gamma + 3\delta & \alpha + 3\gamma \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$

$$\begin{aligned} 4\gamma - 2\delta &= 0 \\ 3\alpha + \beta + 3\gamma &= 0 \\ \alpha + \gamma + 3\delta &= 0 \\ \alpha + 3\gamma &= 0 \end{aligned}$$

Zadatak 4

Ispitajte jesu li sljedeće matrice linearno nezavisne u $M_2(\mathbb{R})$*:*

$$\begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix}, \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix}, \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix}, \begin{bmatrix} -2 & 0 \\ 3 & 0 \end{bmatrix}.$$

Rješenje

$$\alpha \cdot \begin{bmatrix} 0 & 3 \\ 1 & 1 \end{bmatrix} + \beta \cdot \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} + \gamma \cdot \begin{bmatrix} 4 & 3 \\ 1 & 3 \end{bmatrix} + \delta \cdot \begin{bmatrix} -2 & 0 \\ 3 & 0 \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$

$$\begin{bmatrix} 4\gamma - 2\delta & 3\alpha + \beta + 3\gamma \\ \alpha + \gamma + 3\delta & \alpha + 3\gamma \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix} \qquad \left.\begin{aligned} 4\gamma - 2\delta &= 0 \\ 3\alpha + \beta + 3\gamma &= 0 \\ \alpha + \gamma + 3\delta &= 0 \\ \alpha + 3\gamma &= 0 \end{aligned}\right\}$$

$$\begin{aligned} 4\gamma - 2\delta &= 0 \\ 3\alpha + \beta + 3\gamma &= 0 \\ \alpha + \gamma + 3\delta &= 0 \\ \alpha + 3\gamma &= 0 \end{aligned}$$

α	β	γ	δ	

$$\begin{aligned} 4\gamma - 2\delta &= 0 \\ 3\alpha + \beta + 3\gamma &= 0 \\ \alpha + \gamma + 3\delta &= 0 \\ \alpha + 3\gamma &= 0 \end{aligned}$$

α	β	γ	δ	
0	0	4	-2	0

$$\begin{aligned} 4\gamma - 2\delta &= 0 \\ 3\alpha + \beta + 3\gamma &= 0 \\ \alpha + \gamma + 3\delta &= 0 \\ \alpha + 3\gamma &= 0 \end{aligned}$$

α	β	γ	δ	
0	0	4	-2	0
3	1	3	0	0

$$\begin{aligned} 4\gamma - 2\delta &= 0 \\ 3\alpha + \beta + 3\gamma &= 0 \\ \alpha + \gamma + 3\delta &= 0 \\ \alpha + 3\gamma &= 0 \end{aligned}$$

α	β	γ	δ	
0	0	4	-2	0
3	1	3	0	0
1	0	1	3	0

$$\begin{aligned} 4\gamma - 2\delta &= 0 \\ 3\alpha + \beta + 3\gamma &= 0 \\ \alpha + \gamma + 3\delta &= 0 \\ \alpha + 3\gamma &= 0 \end{aligned}$$

α	β	γ	δ	
0	0	4	-2	0
3	1	3	0	0
1	0	1	3	0
1	0	3	0	0

$$\begin{aligned} 4\gamma - 2\delta &= 0 \\ 3\alpha + \beta + 3\gamma &= 0 \\ \alpha + \gamma + 3\delta &= 0 \\ \alpha + 3\gamma &= 0 \end{aligned}$$

α	β	γ	δ	
0	0	4	-2	0
3	1	3	0	0
1	0	1	3	0
1	0	3	0	0

$$\begin{aligned} 4\gamma - 2\delta &= 0 \\ 3\alpha + \beta + 3\gamma &= 0 \\ \alpha + \gamma + 3\delta &= 0 \\ \alpha + 3\gamma &= 0 \end{aligned}$$

α	β	γ	δ		
0	0	4	-2	0	/: (-2)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	

$$\begin{aligned} 4\gamma - 2\delta &= 0 \\ 3\alpha + \beta + 3\gamma &= 0 \\ \alpha + \gamma + 3\delta &= 0 \\ \alpha + 3\gamma &= 0 \end{aligned}$$

$$\begin{array}{cccc|cl} \alpha & \beta & \gamma & \delta & & \\ \hline 0 & 0 & 4 & -2 & 0 & /:(-2) \\ 3 & 1 & 3 & 0 & 0 & \\ 1 & 0 & 1 & 3 & 0 & \\ 1 & 0 & 3 & 0 & 0 & \\ \hline 0 & 0 & -2 & 1 & 0 & \end{array}$$

$$\begin{aligned} 4\gamma - 2\delta &= 0 \\ 3\alpha + \beta + 3\gamma &= 0 \\ \alpha + \gamma + 3\delta &= 0 \\ \alpha + 3\gamma &= 0 \end{aligned}$$

α	β	γ	δ		
0	0	4	-2	0	$/ : (-2)$
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	
0	0	-2	1	0	
3	1	3	0	0	

$$\begin{aligned} 4\gamma - 2\delta &= 0 \\ 3\alpha + \beta + 3\gamma &= 0 \\ \alpha + \gamma + 3\delta &= 0 \\ \alpha + 3\gamma &= 0 \end{aligned}$$

α	β	γ	δ		
0	0	4	-2	0	$/:(-2)$
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	
0	0	-2	1	0	
3	1	3	0	0	
1	0	1	3	0	

$$\begin{aligned} 4\gamma - 2\delta &= 0 \\ 3\alpha + \beta + 3\gamma &= 0 \\ \alpha + \gamma + 3\delta &= 0 \\ \alpha + 3\gamma &= 0 \end{aligned}$$

α	β	γ	δ		
0	0	4	-2	0	/:(-2)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	
0	0	-2	1	0	
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	

$$\begin{aligned} 4\gamma - 2\delta &= 0 \\ 3\alpha + \beta + 3\gamma &= 0 \\ \alpha + \gamma + 3\delta &= 0 \\ \alpha + 3\gamma &= 0 \end{aligned}$$

α	β	γ	δ		
0	0	4	-2	0	/:(-2)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	
0	0	-2	1	0	
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	

$$\begin{aligned} 4\gamma - 2\delta &= 0 \\ 3\alpha + \beta + 3\gamma &= 0 \\ \alpha + \gamma + 3\delta &= 0 \\ \alpha + 3\gamma &= 0 \end{aligned}$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
 & & & & &
\end{array}
$$

$$
\begin{aligned}
4\gamma - 2\delta &= 0 \\
3\alpha + \beta + 3\gamma &= 0 \\
\alpha + \gamma + 3\delta &= 0 \\
\alpha + 3\gamma &= 0
\end{aligned}
$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\ \hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\ \hline
\end{array}$$

$$\begin{aligned}
4\gamma - 2\delta &= 0 \\
3\alpha + \beta + 3\gamma &= 0 \\
\alpha + \gamma + 3\delta &= 0 \\
\alpha + 3\gamma &= 0
\end{aligned}$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \enclose{circle}{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \xleftarrow{+} \\
1 & 0 & 3 & 0 & 0 & \\
\hline
 & & & & &
\end{array}$$

$$\begin{aligned}
4\gamma - 2\delta &= 0 \\
3\alpha + \beta + 3\gamma &= 0 \\
\alpha + \gamma + 3\delta &= 0 \\
\alpha + 3\gamma &= 0
\end{aligned}$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \xleftarrow{+} \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 &
\end{array}$$

$$\begin{aligned}
4\gamma - 2\delta &= 0 \\
3\alpha + \beta + 3\gamma &= 0 \\
\alpha + \gamma + 3\delta &= 0 \\
\alpha + 3\gamma &= 0
\end{aligned}$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \enclose{circle}{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \quad + \\
1 & 0 & 1 & 3 & 0 & \leftarrow \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \\
\end{array}
$$

$$
\begin{aligned}
4\gamma - 2\delta &= 0 \\
3\alpha + \beta + 3\gamma &= 0 \\
\alpha + \gamma + 3\delta &= 0 \\
\alpha + 3\gamma &= 0
\end{aligned}
$$

$$\begin{array}{cccc|c|l}
\alpha & \beta & \gamma & \delta & & \\ \hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \\
1 & & & & & \\
 & & & & &
\end{array}$$

$$\begin{aligned}
4\gamma - 2\delta &= 0 \\
3\alpha + \beta + 3\gamma &= 0 \\
\alpha + \gamma + 3\delta &= 0 \\
\alpha + 3\gamma &= 0
\end{aligned}$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & & & & \\
 & & & & & \\
\end{array}
$$

$$
\begin{aligned}
4\gamma - 2\delta &= 0 \\
3\alpha + \beta + 3\gamma &= 0 \\
\alpha + \gamma + 3\delta &= 0 \\
\alpha + 3\gamma &= 0
\end{aligned}
$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \xleftarrow{+} \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 7 & & & \\
 & & & & & \\
\end{array}
$$

$$
\begin{aligned}
4\gamma - 2\delta &= 0 \\
3\alpha + \beta + 3\gamma &= 0 \\
\alpha + \gamma + 3\delta &= 0 \\
\alpha + 3\gamma &= 0
\end{aligned}
$$

$$\begin{array}{cccc|c|l}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \bigcirc\!\!\!\!\!1 & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \xleftarrow{+} \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 7 & 0 & & \\
\end{array}$$

$$\begin{aligned}
4\gamma - 2\delta &= 0 \\
3\alpha + \beta + 3\gamma &= 0 \\
\alpha + \gamma + 3\delta &= 0 \\
\alpha + 3\gamma &= 0
\end{aligned}$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\ \hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & \enclose{circle}{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 7 & 0 & 0 &
\end{array}$$

$$\begin{aligned}
4\gamma - 2\delta &= 0 \\
3\alpha + \beta + 3\gamma &= 0 \\
\alpha + \gamma + 3\delta &= 0 \\
\alpha + 3\gamma &= 0
\end{aligned}$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 7 & 0 & 0 & \\
1 & 0 & 3 & 0 & 0 &
\end{array}$$

$$\begin{aligned}
4\gamma - 2\delta &= 0 \\
3\alpha + \beta + 3\gamma &= 0 \\
\alpha + \gamma + 3\delta &= 0 \\
\alpha + 3\gamma &= 0
\end{aligned}$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 7 & 0 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
 & & & & &
\end{array}
$$

$$
\begin{aligned}
4\gamma - 2\delta &= 0 \\
3\alpha + \beta + 3\gamma &= 0 \\
\alpha + \gamma + 3\delta &= 0 \\
\alpha + 3\gamma &= 0
\end{aligned}
$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \quad\big\downarrow + \\
1 & 0 & 1 & 3 & 0 & \hookleftarrow \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 7 & 0 & 0 & \\
\textcircled{1} & 0 & 3 & 0 & 0 & \\
\hline
 & & & & &
\end{array}$$

$$\begin{aligned}
4\gamma - 2\delta &= 0 \\
3\alpha + \beta + 3\gamma &= 0 \\
\alpha + \gamma + 3\delta &= 0 \\
\alpha + 3\gamma &= 0
\end{aligned}$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \xleftarrow{+} \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 7 & 0 & 0 & \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1) \\
\hline
 & & & & &
\end{array}$$

$$\begin{aligned}
4\gamma - 2\delta &= 0 \\
3\alpha + \beta + 3\gamma &= 0 \\
\alpha + \gamma + 3\delta &= 0 \\
\alpha + 3\gamma &= 0
\end{aligned}$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\ \hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 7 & 0 & 0 & \leftarrow + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1) \\ \hline
 & & & & &
\end{array}$$

$$\begin{aligned}
4\gamma - 2\delta &= 0 \\
3\alpha + \beta + 3\gamma &= 0 \\
\alpha + \gamma + 3\delta &= 0 \\
\alpha + 3\gamma &= 0
\end{aligned}$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 7 & 0 & 0 & \leftarrow + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
\end{array}$$

$$\begin{aligned}
4\gamma - 2\delta &= 0 \\
3\alpha + \beta + 3\gamma &= 0 \\
\alpha + \gamma + 3\delta &= 0 \\
\alpha + 3\gamma &= 0
\end{aligned}$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \xleftarrow{+} \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \xleftarrow{+} \\
1 & 0 & 7 & 0 & 0 & \xleftarrow{+} \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
\end{array}
$$

$$
\begin{aligned}
4\gamma - 2\delta &= 0 \\
3\alpha + \beta + 3\gamma &= 0 \\
\alpha + \gamma + 3\delta &= 0 \\
\alpha + 3\gamma &= 0
\end{aligned}
$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\ \hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 7 & 0 & 0 & \leftarrow + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1) \; /\cdot(-3) \\ \hline
 & & & & &
\end{array}$$

$$\begin{array}{cccc|c}
\alpha & \beta & \gamma & \delta & \\ \hline
 & & & &
\end{array}$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 7 & 0 & 0 & \leftarrow + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
 & & & & &
\end{array}
$$

$$
\begin{array}{cccc|c}
\alpha & \beta & \gamma & \delta & \\
\hline
 & & & & \\
 & & & & \\
 & & & & \\
1 & 0 & 3 & 0 & 0 \\
 & & & & \\
\end{array}
$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 7 & 0 & 0 & \leftarrow + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
 & & & & &
\end{array}$$

$$\begin{array}{cccc|c}
\alpha & \beta & \gamma & \delta & \\
\hline
 & & & & \\
 & & & & \\
0 & & & & \\
1 & 0 & 3 & 0 & 0 \\
 & & & &
\end{array}$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \xleftarrow{+} \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \xleftarrow{+} \\
1 & 0 & 7 & 0 & 0 & \xleftarrow{+} \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
 & & & & &
\end{array}
$$

$$
\begin{array}{cccc|c}
\alpha & \beta & \gamma & \delta & \\
\hline
 & & & & \\
 & & & & \\
0 & 0 & & & \\
1 & 0 & 3 & 0 & 0 \\
 & & & &
\end{array}
$$

α	β	γ	δ		
0	0	4	−2	0	/:(−2)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	
0	0	−2	①	0	/·(−3)
3	1	3	0	0	
1	0	1	3	0	+
1	0	3	0	0	
0	0	−2	1	0	
3	1	3	0	0	+
1	0	7	0	0	+
①	0	3	0	0	/·(−1) /·(−3)

α	β	γ	δ	
0	0	4		
1	0	3	0	0

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 7 & 0 & 0 & \leftarrow + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
 & & & & &
\end{array}$$

$$\begin{array}{cccc|c}
\alpha & \beta & \gamma & \delta & \\
\hline
 & & & & \\
 & & & & \\
0 & 0 & 4 & 0 & \\
1 & 0 & 3 & 0 & 0 \\
 & & & & \\
\end{array}$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 7 & 0 & 0 & \leftarrow + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
 & & & & &
\end{array}$$

$$\begin{array}{cccc|c}
\alpha & \beta & \gamma & \delta & \\
\hline
 & & & & \\
 & & & & \\
0 & 0 & 4 & 0 & 0 \\
1 & 0 & 3 & 0 & 0
\end{array}$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\ \hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 7 & 0 & 0 & \leftarrow + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\ \hline
\end{array}$$

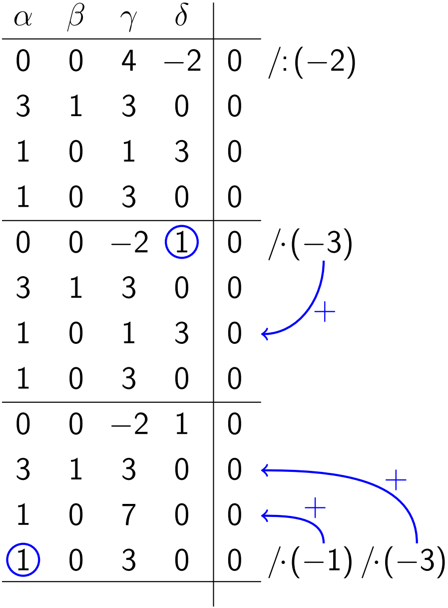
$$\begin{array}{cccc|c}
\alpha & \beta & \gamma & \delta & \\ \hline
 & & & & \\
0 & & & & \\
0 & 0 & 4 & 0 & 0 \\
1 & 0 & 3 & 0 & 0
\end{array}$$

α	β	γ	δ		
0	0	4	−2	0	/:(−2)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	
0	0	−2	①	0	/·(−3)
3	1	3	0	0	
1	0	1	3	0	+
1	0	3	0	0	
0	0	−2	1	0	
3	1	3	0	0	+
1	0	7	0	0	+
①	0	3	0	0	/·(−1) /·(−3)

α	β	γ	δ	
0	1			
0	0	4	0	0
1	0	3	0	0

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\ \hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \xleftarrow{+} \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \xleftarrow{+} \\
1 & 0 & 7 & 0 & 0 & \xleftarrow{+} \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\ \hline
\end{array}$$

$$\begin{array}{cccc|c}
\alpha & \beta & \gamma & \delta & \\ \hline
 & & & & \\
0 & 1 & -6 & & \\
0 & 0 & 4 & 0 & 0 \\
1 & 0 & 3 & 0 & 0
\end{array}$$



$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\ \hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 7 & 0 & 0 & \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\ \hline
\end{array}$$

$$\begin{array}{cccc|c}
\alpha & \beta & \gamma & \delta & \\ \hline
 & & & & \\
0 & 1 & -6 & 0 & \\
0 & 0 & 4 & 0 & 0 \\
1 & 0 & 3 & 0 & 0 \\
\end{array}$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\ \hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \xleftarrow{+} \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \xleftarrow{+} \\
1 & 0 & 7 & 0 & 0 & \xleftarrow{+} \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\ \hline
\end{array}$$

$$\begin{array}{cccc|c}
\alpha & \beta & \gamma & \delta & \\ \hline
 & & & & \\
0 & 1 & -6 & 0 & 0 \\
0 & 0 & 4 & 0 & 0 \\
1 & 0 & 3 & 0 & 0 \\
\end{array}$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \xleftarrow{+} \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \xleftarrow{+} \\
1 & 0 & 7 & 0 & 0 & \xleftarrow{+} \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
 & & & & &
\end{array}$$

$$\begin{array}{cccc|c}
\alpha & \beta & \gamma & \delta & \\
\hline
0 & 0 & -2 & 1 & 0 \\
0 & 1 & -6 & 0 & 0 \\
0 & 0 & 4 & 0 & 0 \\
1 & 0 & 3 & 0 & 0
\end{array}$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 7 & 0 & 0 & \leftarrow + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
\end{array}
$$

$$
\begin{array}{cccc|c}
\alpha & \beta & \gamma & \delta & \\
\hline
0 & 0 & -2 & 1 & 0 \\
0 & 1 & -6 & 0 & 0 \\
0 & 0 & 4 & 0 & 0 \\
1 & 0 & 3 & 0 & 0 \\
\hline
\end{array}
$$

α	β	γ	δ		
0	0	4	−2	0	/:(−2)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	

0	0	−2	①	0	/·(−3)
3	1	3	0	0	
1	0	1	3	0	+
1	0	3	0	0	

0	0	−2	1	0	
3	1	3	0	0	+
1	0	7	0	0	+
①	0	3	0	0	/·(−1) /·(−3)

α	β	γ	δ		
0	0	−2	1	0	
0	1	−6	0	0	
0	0	4	0	0	/:4
1	0	3	0	0	

α	β	γ	δ		
0	0	4	−2	0	/:(−2)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	
0	0	−2	①	0	/·(−3)
3	1	3	0	0	
1	0	1	3	0	+
1	0	3	0	0	
0	0	−2	1	0	
3	1	3	0	0	+
1	0	7	0	0	+
①	0	3	0	0	/·(−1) /·(−3)

α	β	γ	δ		
0	0	−2	1	0	
0	1	−6	0	0	
0	0	4	0	0	/:4
1	0	3	0	0	
0	0	−2	1	0	

α	β	γ	δ		
0	0	4	−2	0	/:(−2)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	
0	0	−2	①	0	/·(−3)
3	1	3	0	0	
1	0	1	3	0	+
1	0	3	0	0	
0	0	−2	1	0	
3	1	3	0	0	+
1	0	7	0	0	+
①	0	3	0	0	/·(−1) /·(−3)

α	β	γ	δ		
0	0	−2	1	0	
0	1	−6	0	0	
0	0	4	0	0	/:4
1	0	3	0	0	
0	0	−2	1	0	
0	1	−6	0	0	

α	β	γ	δ		
0	0	4	−2	0	/:(−2)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	

0	0	−2	$\textcircled{1}$	0	/·(−3)
3	1	3	0	0	
1	0	1	3	0	+
1	0	3	0	0	

0	0	−2	1	0	
3	1	3	0	0	+
1	0	7	0	0	+
$\textcircled{1}$	0	3	0	0	/·(−1) /·(−3)

α	β	γ	δ		
0	0	−2	1	0	
0	1	−6	0	0	
0	0	4	0	0	/:4
1	0	3	0	0	

0	0	−2	1	0
0	1	−6	0	0
0	0	1	0	0

α	β	γ	δ		
0	0	4	−2	0	/:(−2)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	

0	0	−2	①	0	/·(−3)
3	1	3	0	0	
1	0	1	3	0	← +
1	0	3	0	0	

0	0	−2	1	0	
3	1	3	0	0	← +
1	0	7	0	0	← +
①	0	3	0	0	/·(−1) /·(−3)

α	β	γ	δ		
0	0	−2	1	0	
0	1	−6	0	0	
0	0	4	0	0	/:4
1	0	3	0	0	

0	0	−2	1	0
0	1	−6	0	0
0	0	1	0	0
1	0	3	0	0

α	β	γ	δ		
0	0	4	−2	0	/:(−2)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	
0	0	−2	$\textcircled{1}$	0	/·(−3)
3	1	3	0	0	
1	0	1	3	0	+
1	0	3	0	0	
0	0	−2	1	0	
3	1	3	0	0	+
1	0	7	0	0	+
$\textcircled{1}$	0	3	0	0	/·(−1) /·(−3)

α	β	γ	δ		
0	0	−2	1	0	
0	1	−6	0	0	
0	0	4	0	0	/:4
1	0	3	0	0	
0	0	−2	1	0	
0	1	−6	0	0	
0	0	1	0	0	
1	0	3	0	0	

$$\begin{array}{cccc|c|l}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \xleftarrow{+} \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \xleftarrow{+} \\
1 & 0 & 7 & 0 & 0 & \xleftarrow{+} \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
\end{array}$$

$$\begin{array}{cccc|c|l}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & 4 & 0 & 0 & /:4 \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & \textcircled{1} & 0 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
\end{array}$$

α	β	γ	δ		
0	0	4	−2	0	/:(−2)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	
0	0	−2	①	0	/·(−3)
3	1	3	0	0	
1	0	1	3	0	+
1	0	3	0	0	
0	0	−2	1	0	
3	1	3	0	0	+
1	0	7	0	0	+
①	0	3	0	0	/·(−1) /·(−3)

α	β	γ	δ		
0	0	−2	1	0	
0	1	−6	0	0	
0	0	4	0	0	/:4
1	0	3	0	0	
0	0	−2	1	0	
0	1	−6	0	0	
0	0	①	0	0	/·(−3)
1	0	3	0	0	

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\ \hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & \enclose{circle}{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 7 & 0 & 0 & \leftarrow + \\
\enclose{circle}{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\ \hline
\end{array}$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\ \hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & 4 & 0 & 0 & /:4 \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & \enclose{circle}{1} & 0 & 0 & /\cdot(-3) \\
1 & 0 & 3 & 0 & 0 & \leftarrow + \\ \hline
\end{array}$$

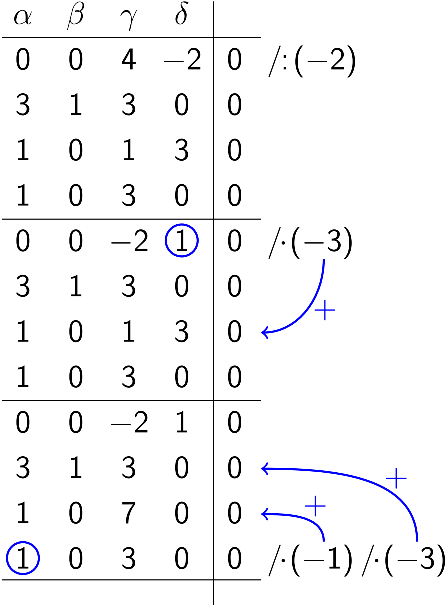
α	β	γ	δ		
0	0	4	−2	0	/:(−2)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	

0	0	−2	$\textcircled{1}$	0	/·(−3)
3	1	3	0	0	
1	0	1	3	0	+
1	0	3	0	0	

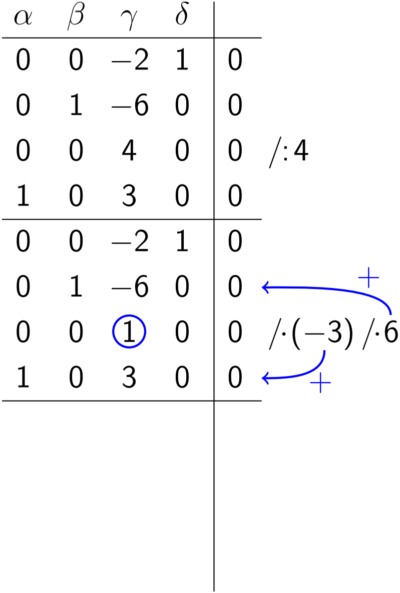
0	0	−2	1	0	
3	1	3	0	0	+
1	0	7	0	0	+
$\textcircled{1}$	0	3	0	0	/·(−1) /·(−3)

α	β	γ	δ		
0	0	−2	1	0	
0	1	−6	0	0	
0	0	4	0	0	/:4
1	0	3	0	0	

0	0	−2	1	0	
0	1	−6	0	0	
0	0	$\textcircled{1}$	0	0	/·(−3) /·6
1	0	3	0	0	+



α	β	γ	δ		
0	0	4	−2	0	/:(−2)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	
0	0	−2	①	0	/·(−3)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	
0	0	−2	1	0	
3	1	3	0	0	
1	0	7	0	0	
①	0	3	0	0	/·(−1) /·(−3)



α	β	γ	δ		
0	0	−2	1	0	
0	1	−6	0	0	
0	0	4	0	0	/:4
1	0	3	0	0	
0	0	−2	1	0	
0	1	−6	0	0	
0	0	①	0	0	/·(−3) /·6
1	0	3	0	0	

α	β	γ	δ		
0	0	4	−2	0	/:(−2)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	
0	0	−2	①	0	/·(−3)
3	1	3	0	0	
1	0	1	3	0	← +
1	0	3	0	0	
0	0	−2	1	0	
3	1	3	0	0	← +
1	0	7	0	0	← +
①	0	3	0	0	/·(−1) /·(−3)

α	β	γ	δ		
0	0	−2	1	0	
0	1	−6	0	0	
0	0	4	0	0	/:4
1	0	3	0	0	
0	0	−2	1	0	
0	1	−6	0	0	← +
0	0	①	0	0	/·(−3) /·6 /·2
1	0	3	0	0	← +

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\ \hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 7 & 0 & 0 & \leftarrow + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\ \hline
\end{array}$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\ \hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & 4 & 0 & 0 & /:4 \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & 1 & 0 & \leftarrow + \\
0 & 1 & -6 & 0 & 0 & \leftarrow + \\
0 & 0 & \textcircled{1} & 0 & 0 & /\cdot(-3)\ /\cdot 6\ /\cdot 2 \\
1 & 0 & 3 & 0 & 0 & \leftarrow + \\ \hline
\end{array}$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 7 & 0 & 0 & \leftarrow + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
 & & & & &
\end{array}
$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & 4 & 0 & 0 & /:4 \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \leftarrow + \\
0 & 1 & -6 & 0 & 0 & \leftarrow + \\
0 & 0 & \textcircled{1} & 0 & 0 & /\cdot(-3)\ /\cdot 6\ /\cdot 2 \\
1 & 0 & 3 & 0 & 0 & \leftarrow + \\
\hline
 & & & & & \\
 & & & & & \\
0 & 0 & 1 & 0 & 0 & \\
 & & & & &
\end{array}
$$

α	β	γ	δ		
0	0	4	−2	0	/:(−2)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	
0	0	−2	$\textcircled{1}$	0	/·(−3)
3	1	3	0	0	
1	0	1	3	0	+
1	0	3	0	0	
0	0	−2	1	0	
3	1	3	0	0	+
1	0	7	0	0	+
$\textcircled{1}$	0	3	0	0	/·(−1) /·(−3)

α	β	γ	δ		
0	0	−2	1	0	
0	1	−6	0	0	
0	0	4	0	0	/:4
1	0	3	0	0	
0	0	−2	1	0	+
0	1	−6	0	0	+
0	0	$\textcircled{1}$	0	0	/·(−3) /·6 /·2
1	0	3	0	0	+
0	0	1	0	0	
1					

$$
\begin{array}{cccc|c|l}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & + \\
1 & 0 & 7 & 0 & 0 & + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
\end{array}
$$

$$
\begin{array}{cccc|c|l}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & 4 & 0 & 0 & /:4 \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & + \\
0 & 1 & -6 & 0 & 0 & + \\
0 & 0 & \textcircled{1} & 0 & 0 & /\cdot(-3)\ /\cdot 6\ /\cdot 2 \\
1 & 0 & 3 & 0 & 0 & + \\
\hline
 & & & & & \\
 & & & & & \\
0 & 0 & 1 & 0 & 0 & \\
1 & 0 & & & & \\
\end{array}
$$

$$
\begin{array}{cccc|c|l}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & + \\
1 & 0 & 7 & 0 & 0 & + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
 & & & & &
\end{array}
$$

$$
\begin{array}{cccc|c|l}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & 4 & 0 & 0 & /:4 \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & + \\
0 & 1 & -6 & 0 & 0 & + \\
0 & 0 & \textcircled{1} & 0 & 0 & /\cdot(-3)\ /\cdot 6\ /\cdot 2 \\
1 & 0 & 3 & 0 & 0 & + \\
\hline
 & & & & & \\
 & & & & & \\
0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 0 & & &
\end{array}
$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \xleftarrow{+} \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \xleftarrow{+} \\
1 & 0 & 7 & 0 & 0 & \xleftarrow{+} \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
 & & & & &
\end{array}
\qquad
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & 4 & 0 & 0 & /:4 \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \xleftarrow{+} \\
0 & 1 & -6 & 0 & 0 & \xleftarrow{+} \\
0 & 0 & \textcircled{1} & 0 & 0 & /\cdot(-3)\ /\cdot 6\ /\cdot 2 \\
1 & 0 & 3 & 0 & 0 & \xleftarrow{+} \\
\hline
 & & & & & \\
 & & & & & \\
0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 0 & 0 & &
\end{array}
$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 7 & 0 & 0 & \leftarrow + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
 & & & & &
\end{array}$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & 4 & 0 & 0 & /:4 \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \leftarrow + \\
0 & 1 & -6 & 0 & 0 & \leftarrow + \\
0 & 0 & \textcircled{1} & 0 & 0 & /\cdot(-3)\ /\cdot 6\ /\cdot 2 \\
1 & 0 & 3 & 0 & 0 & \leftarrow + \\
\hline
 & & & & & \\
 & & & & & \\
0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 0 & 0 & 0 &
\end{array}$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\ \hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & \boxed{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & + \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & + \\
1 & 0 & 7 & 0 & 0 & + \\
\boxed{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\ \hline
 & & & & &
\end{array}$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\ \hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & 4 & 0 & 0 & /:4 \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & 1 & 0 & + \\
0 & 1 & -6 & 0 & 0 & + \\
0 & 0 & \boxed{1} & 0 & 0 & /\cdot(-3)\ /\cdot 6\ /\cdot 2 \\
1 & 0 & 3 & 0 & 0 & + \\ \hline
 & & & & & \\
0 & & & & & \\
0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 0 & 0 & 0 &
\end{array}$$

α	β	γ	δ		
0	0	4	−2	0	/:(−2)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	

0	0	−2	$\textcircled{1}$	0	/·(−3)
3	1	3	0	0	
1	0	1	3	0	← +
1	0	3	0	0	

0	0	−2	1	0	
3	1	3	0	0	← +
1	0	7	0	0	← +
$\textcircled{1}$	0	3	0	0	/·(−1) /·(−3)

α	β	γ	δ		
0	0	−2	1	0	
0	1	−6	0	0	
0	0	4	0	0	/:4
1	0	3	0	0	

0	0	−2	1	0	← +
0	1	−6	0	0	← +
0	0	$\textcircled{1}$	0	0	/·(−3) /·6 /·2
1	0	3	0	0	← +

0	1			
0	0	1	0	0
1	0	0	0	0

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & + \\
1 & 0 & 7 & 0 & 0 & + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
 & & & & &
\end{array}
\qquad
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & 4 & 0 & 0 & /:4 \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & + \\
0 & 1 & -6 & 0 & 0 & + \\
0 & 0 & \textcircled{1} & 0 & 0 & /\cdot(-3)\ /\cdot 6\ /\cdot 2 \\
1 & 0 & 3 & 0 & 0 & + \\
\hline
 & & & & & \\
0 & 1 & 0 & & & \\
0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 0 & 0 & 0 &
\end{array}
$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 7 & 0 & 0 & \leftarrow + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
 & & & & &
\end{array}
$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & 4 & 0 & 0 & /:4 \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \leftarrow + \\
0 & 1 & -6 & 0 & 0 & \leftarrow + \\
0 & 0 & \textcircled{1} & 0 & 0 & /\cdot(-3)\ /\cdot 6\ /\cdot 2 \\
1 & 0 & 3 & 0 & 0 & \leftarrow + \\
\hline
 & & & & & \\
0 & 1 & 0 & 0 & & \\
0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 0 & 0 & 0 &
\end{array}
$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 7 & 0 & 0 & \leftarrow + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
\end{array}
$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & 4 & 0 & 0 & /:4 \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \leftarrow + \\
0 & 1 & -6 & 0 & 0 & \leftarrow + \\
0 & 0 & \textcircled{1} & 0 & 0 & /\cdot(-3)\ /\cdot 6\ /\cdot 2 \\
1 & 0 & 3 & 0 & 0 & \leftarrow + \\
\hline
 & & & & & \\
0 & 1 & 0 & 0 & 0 & \\
0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 0 & 0 & 0 &
\end{array}
$$

α	β	γ	δ		
0	0	4	−2	0	/:(−2)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	
0	0	−2	①	0	/·(−3)
3	1	3	0	0	
1	0	1	3	0	+
1	0	3	0	0	
0	0	−2	1	0	
3	1	3	0	0	+
1	0	7	0	0	+
①	0	3	0	0	/·(−1) /·(−3)

α	β	γ	δ		
0	0	−2	1	0	
0	1	−6	0	0	
0	0	4	0	0	/:4
1	0	3	0	0	
0	0	−2	1	0	+
0	1	−6	0	0	+
0	0	①	0	0	/·(−3) /·6 /·2
1	0	3	0	0	+
0					
0	1	0	0	0	
0	0	1	0	0	
1	0	0	0	0	

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 7 & 0 & 0 & \leftarrow + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
 & & & & &
\end{array}
$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & 4 & 0 & 0 & /:4 \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \leftarrow + \\
0 & 1 & -6 & 0 & 0 & \leftarrow + \\
0 & 0 & \textcircled{1} & 0 & 0 & /\cdot(-3)\ /\cdot 6\ /\cdot 2 \\
1 & 0 & 3 & 0 & 0 & \leftarrow + \\
\hline
0 & 0 & & & & \\
0 & 1 & 0 & 0 & 0 & \\
0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 0 & 0 & 0 &
\end{array}
$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 7 & 0 & 0 & \leftarrow + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
 & & & & &
\end{array}
$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & 4 & 0 & 0 & /:4 \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \leftarrow + \\
0 & 1 & -6 & 0 & 0 & \leftarrow + \\
0 & 0 & \textcircled{1} & 0 & 0 & /\cdot(-3)\ /\cdot 6\ /\cdot 2 \\
1 & 0 & 3 & 0 & 0 & \leftarrow + \\
\hline
0 & 0 & 0 & & & \\
0 & 1 & 0 & 0 & 0 & \\
0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 0 & 0 & 0 &
\end{array}
$$

α	β	γ	δ		
0	0	4	−2	0	/:(−2)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	
0	0	−2	①	0	/·(−3)
3	1	3	0	0	
1	0	1	3	0	+
1	0	3	0	0	
0	0	−2	1	0	
3	1	3	0	0	+
1	0	7	0	0	+
①	0	3	0	0	/·(−1) /·(−3)

α	β	γ	δ		
0	0	−2	1	0	
0	1	−6	0	0	
0	0	4	0	0	/:4
1	0	3	0	0	
0	0	−2	1	0	+
0	1	−6	0	0	+
0	0	①	0	0	/·(−3) /·6 /·2
1	0	3	0	0	+
0	0	0	1		
0	1	0	0	0	
0	0	1	0	0	
1	0	0	0	0	

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 7 & 0 & 0 & \leftarrow + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
 & & & & &
\end{array}
$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & 4 & 0 & 0 & /:4 \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \leftarrow + \\
0 & 1 & -6 & 0 & 0 & \leftarrow + \\
0 & 0 & \textcircled{1} & 0 & 0 & /\cdot(-3)\ /\cdot 6\ /\cdot 2 \\
1 & 0 & 3 & 0 & 0 & \leftarrow + \\
\hline
0 & 0 & 0 & 1 & 0 & \\
0 & 1 & 0 & 0 & 0 & \\
0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 0 & 0 & 0 &
\end{array}
$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & + \\
1 & 0 & 7 & 0 & 0 & + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
\end{array}
$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & 4 & 0 & 0 & /:4 \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & + \\
0 & 1 & -6 & 0 & 0 & + \\
0 & 0 & \textcircled{1} & 0 & 0 & /\cdot(-3)\ /\cdot 6\ /\cdot 2 \\
1 & 0 & 3 & 0 & 0 & + \\
\hline
0 & 0 & 0 & 1 & 0 & \rightsquigarrow \boxed{\delta = 0} \\
0 & 1 & 0 & 0 & 0 & \\
0 & 0 & 1 & 0 & 0 & \\
1 & 0 & 0 & 0 & 0 & \\
\end{array}
$$

α	β	γ	δ		
0	0	4	−2	0	/:(−2)
3	1	3	0	0	
1	0	1	3	0	
1	0	3	0	0	

0	0	−2	①	0	/·(−3)
3	1	3	0	0	
1	0	1	3	0	+
1	0	3	0	0	

0	0	−2	1	0	
3	1	3	0	0	+
1	0	7	0	0	+
①	0	3	0	0	/·(−1) /·(−3)

α	β	γ	δ		
0	0	−2	1	0	
0	1	−6	0	0	
0	0	4	0	0	/:4
1	0	3	0	0	

0	0	−2	1	0	+
0	1	−6	0	0	+
0	0	①	0	0	/·(−3) /·6 /·2
1	0	3	0	0	+

0	0	0	1	0	$\rightsquigarrow$ $\boxed{\delta = 0}$
0	1	0	0	0	$\rightsquigarrow$ $\boxed{\beta = 0}$
0	0	1	0	0	
1	0	0	0	0	

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\ \hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \xleftarrow{+} \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \xleftarrow{+} \\
1 & 0 & 7 & 0 & 0 & \xleftarrow{+} \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\ \hline
\end{array}$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\ \hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & 4 & 0 & 0 & /:4 \\
1 & 0 & 3 & 0 & 0 & \\ \hline
0 & 0 & -2 & 1 & 0 & \xleftarrow{+} \\
0 & 1 & -6 & 0 & 0 & \xleftarrow{+} \\
0 & 0 & \textcircled{1} & 0 & 0 & /\cdot(-3)\ /\cdot 6\ /\cdot 2 \\
1 & 0 & 3 & 0 & 0 & \xleftarrow{+} \\ \hline
0 & 0 & 0 & 1 & 0 & \rightsquigarrow \boxed{\delta = 0} \\
0 & 1 & 0 & 0 & 0 & \rightsquigarrow \boxed{\beta = 0} \\
0 & 0 & 1 & 0 & 0 & \rightsquigarrow \boxed{\gamma = 0} \\
1 & 0 & 0 & 0 & 0 &
\end{array}$$

$$\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \leftarrow + \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \leftarrow + \\
1 & 0 & 7 & 0 & 0 & \leftarrow + \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
\end{array}
\qquad
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & 4 & 0 & 0 & /:4 \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \leftarrow + \\
0 & 1 & -6 & 0 & 0 & \leftarrow + \\
0 & 0 & \textcircled{1} & 0 & 0 & /\cdot(-3)\ /\cdot 6\ /\cdot 2 \\
1 & 0 & 3 & 0 & 0 & \leftarrow + \\
\hline
0 & 0 & 0 & 1 & 0 & \rightsquigarrow \boxed{\delta = 0} \\
0 & 1 & 0 & 0 & 0 & \rightsquigarrow \boxed{\beta = 0} \\
0 & 0 & 1 & 0 & 0 & \rightsquigarrow \boxed{\gamma = 0} \\
1 & 0 & 0 & 0 & 0 & \rightsquigarrow \boxed{\alpha = 0} \\
\end{array}$$

$$
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & 4 & -2 & 0 & /:(-2) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & \textcircled{1} & 0 & /\cdot(-3) \\
3 & 1 & 3 & 0 & 0 & \\
1 & 0 & 1 & 3 & 0 & \xleftarrow{+} \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
3 & 1 & 3 & 0 & 0 & \xleftarrow{+} \\
1 & 0 & 7 & 0 & 0 & \xleftarrow{+} \\
\textcircled{1} & 0 & 3 & 0 & 0 & /\cdot(-1)\ /\cdot(-3) \\
\hline
\end{array}
\qquad
\begin{array}{cccc|cl}
\alpha & \beta & \gamma & \delta & & \\
\hline
0 & 0 & -2 & 1 & 0 & \\
0 & 1 & -6 & 0 & 0 & \\
0 & 0 & 4 & 0 & 0 & /:4 \\
1 & 0 & 3 & 0 & 0 & \\
\hline
0 & 0 & -2 & 1 & 0 & \xleftarrow{+} \\
0 & 1 & -6 & 0 & 0 & \xleftarrow{+} \\
0 & 0 & \textcircled{1} & 0 & 0 & /\cdot(-3)\ /\cdot 6\ /\cdot 2 \\
1 & 0 & 3 & 0 & 0 & \xleftarrow{+} \\
\hline
0 & 0 & 0 & 1 & 0 & \rightsquigarrow \boxed{\delta = 0} \\
0 & 1 & 0 & 0 & 0 & \rightsquigarrow \boxed{\beta = 0} \\
0 & 0 & 1 & 0 & 0 & \rightsquigarrow \boxed{\gamma = 0} \\
1 & 0 & 0 & 0 & 0 & \rightsquigarrow \boxed{\alpha = 0} \\
\end{array}
$$

Zadane matrice su linearno nezavisne u $M_2(\mathbb{R})$ pa se niti jedna od njih ne može napisati kao linearna kombinacija preostalih.