

Seminari 2

MATEMATIČKE METODE ZA INFORMATIČARE

Damir Horvat

FOI, Varaždin

Sadržaj

prvi zadatak

drugi zadatak

treći zadatak

četvrti zadatak

peti zadatak

prvi zadatak

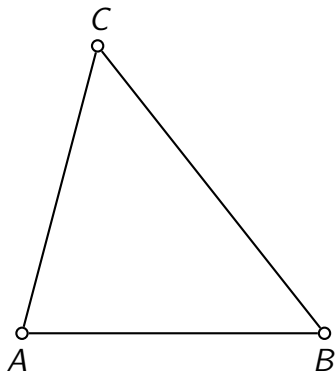
Zadatak 1

Točka D leži na stranici \overline{BC} trokuta ABC i dijeli tu stranicu u omjeru $2 : 3$. Prikažite vektor \overrightarrow{AD} kao linearnu kombinaciju vektora \overrightarrow{AB} i \overrightarrow{AC} .

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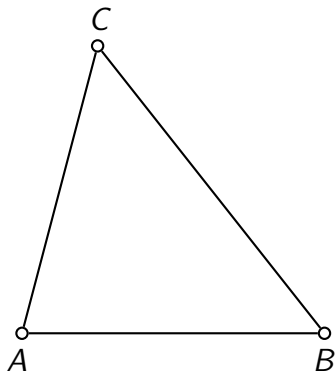
Rješenje



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Rješenje

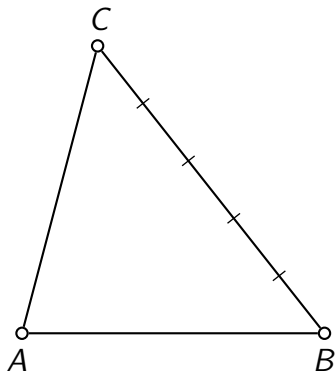


$$|BD| : |CD| = 2 : 3$$

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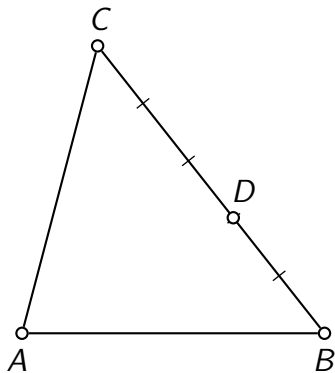


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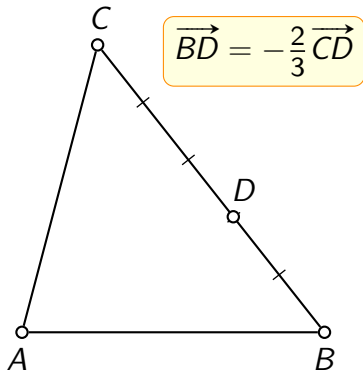


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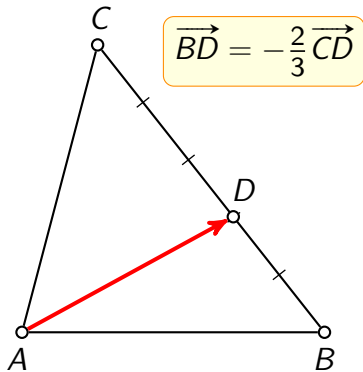


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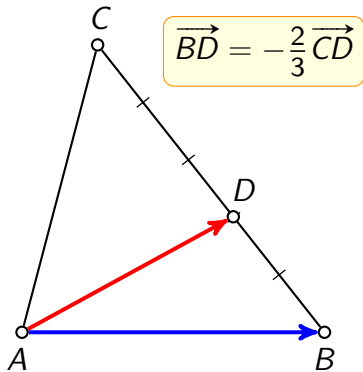


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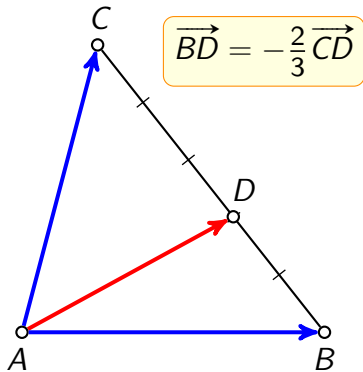


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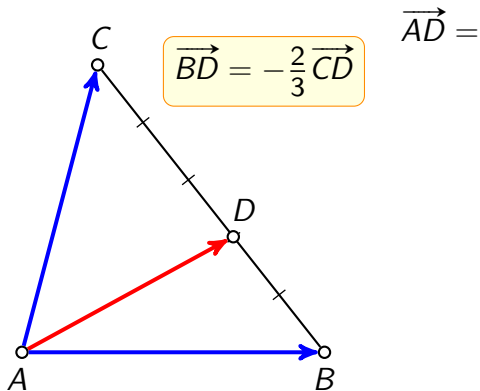


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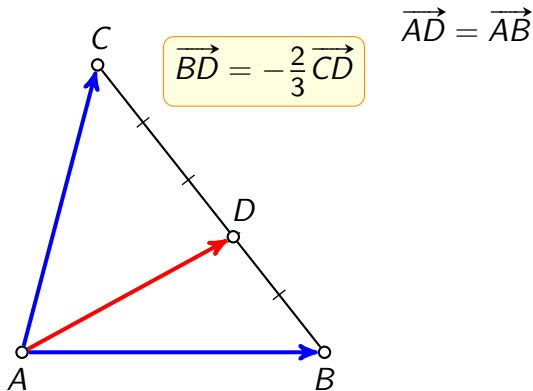


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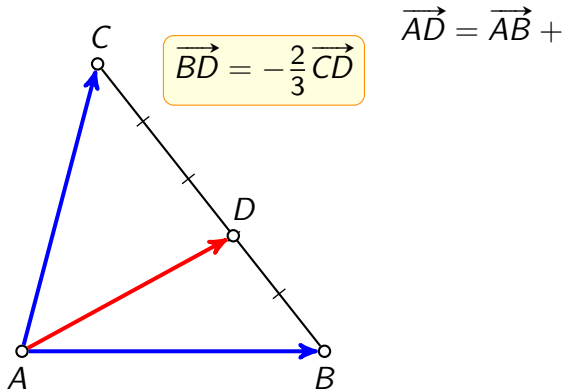


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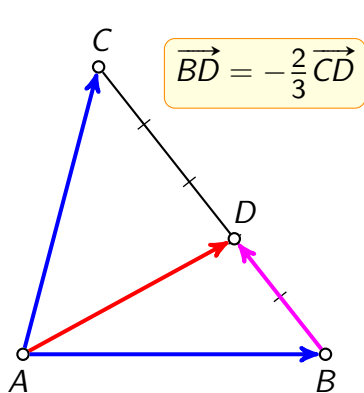


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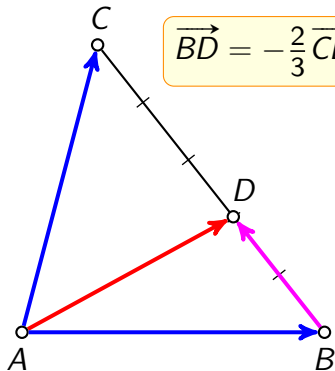
$$\overrightarrow{AD} = \overrightarrow{AB} + \overrightarrow{BD}$$

$$|BD| : |CD| = 2 : 3$$

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Rješenje



$$\overrightarrow{BD} = -\frac{2}{3}\overrightarrow{CD}$$

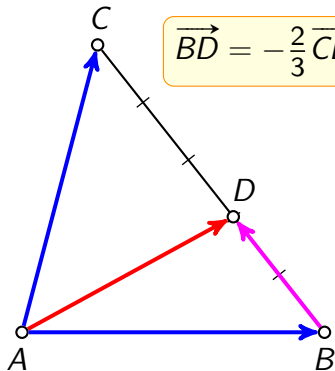
$$\overrightarrow{AD} = \overrightarrow{AB} + \overrightarrow{BD} = \overrightarrow{AB} +$$

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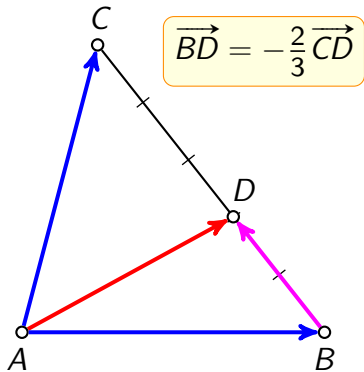
$$\overrightarrow{AD} = \overrightarrow{AB} + \overrightarrow{BD} = \overrightarrow{AB} + \frac{2}{5}\overrightarrow{BC}$$

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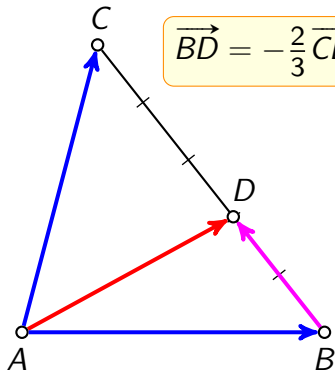
$$\begin{aligned}\overrightarrow{AD} &= \overrightarrow{AB} + \overrightarrow{BD} = \overrightarrow{AB} + \frac{2}{5}\overrightarrow{BC} = \\ &= \overrightarrow{AB} +\end{aligned}$$

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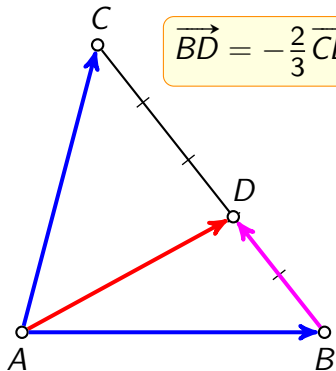
$$\begin{aligned}\overrightarrow{AD} &= \overrightarrow{AB} + \overrightarrow{BD} = \overrightarrow{AB} + \frac{2}{5}\overrightarrow{BC} = \\ &= \overrightarrow{AB} + \frac{2}{5}\left(\overrightarrow{AC} - \overrightarrow{AB}\right)\end{aligned}$$

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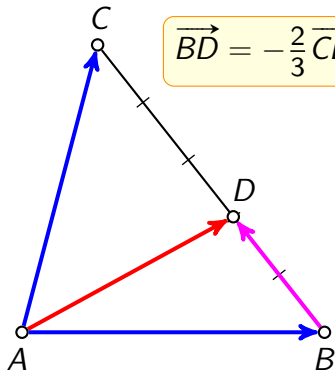
$$\begin{aligned}\overrightarrow{AD} &= \overrightarrow{AB} + \overrightarrow{BD} = \overrightarrow{AB} + \frac{2}{5}\overrightarrow{BC} = \\ &= \overrightarrow{AB} + \frac{2}{5}(\overrightarrow{BA})\end{aligned}$$

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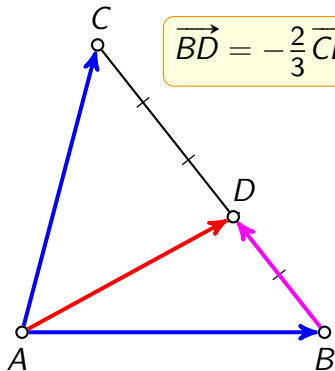
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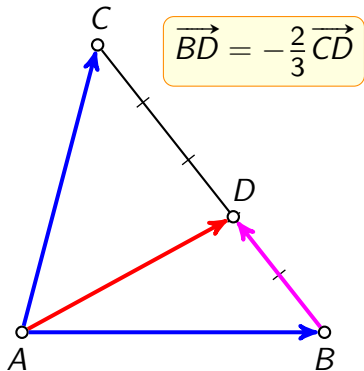
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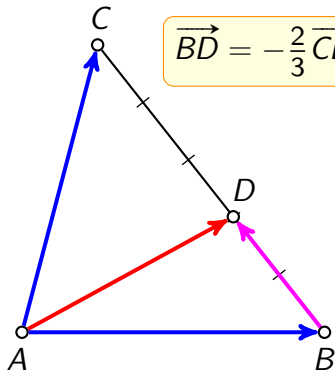
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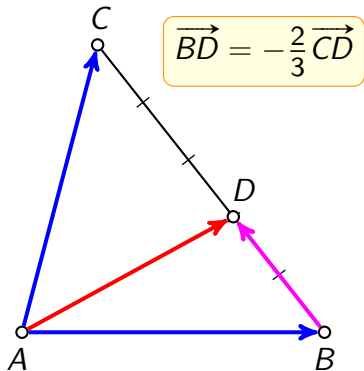
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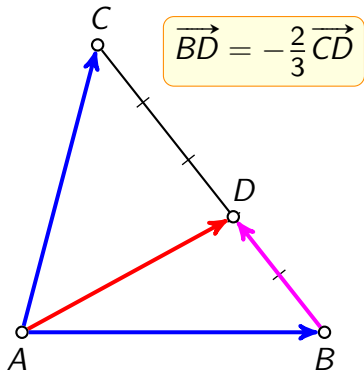
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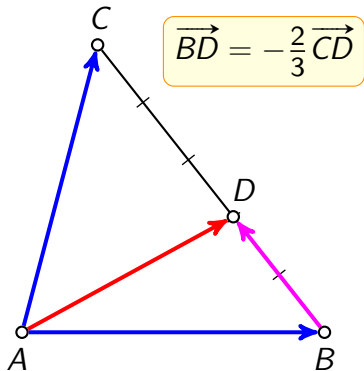
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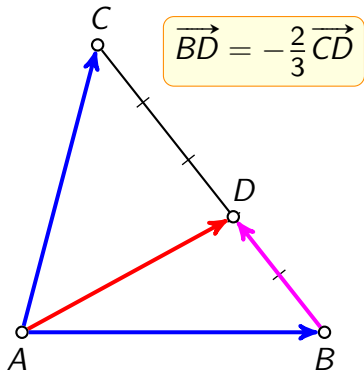
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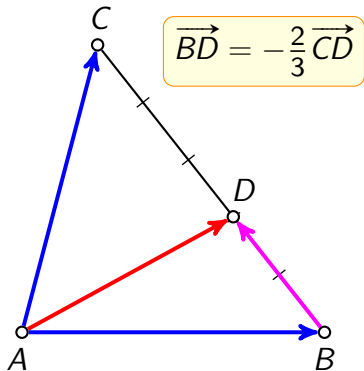
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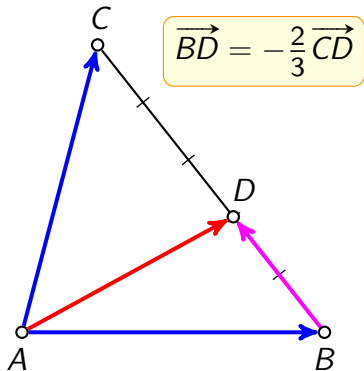
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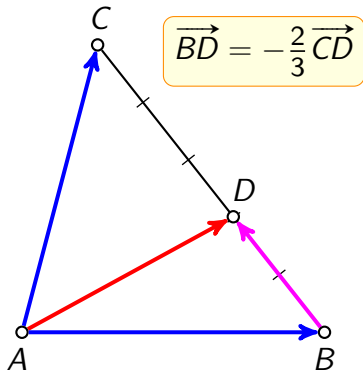
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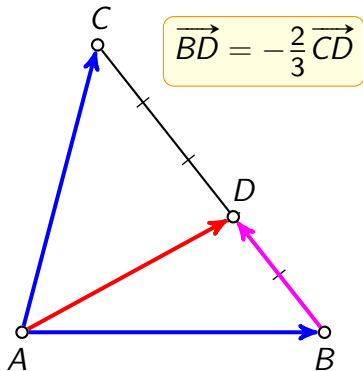
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$$\overrightarrow{AD} = \frac{3}{5}\overrightarrow{AB} + \frac{2}{5}\overrightarrow{AC}$$

drugi zadatak

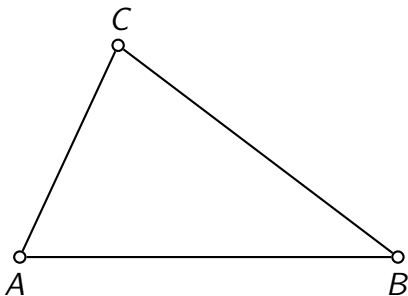
Zadatak 2

Na stranici \overline{BC} trokuta ABC zadana je točka M takva da je

$|BM| = \frac{2}{3}|BC|$ i točka N na stranici \overline{AC} takva da je $|CA| = 4|CN|$.

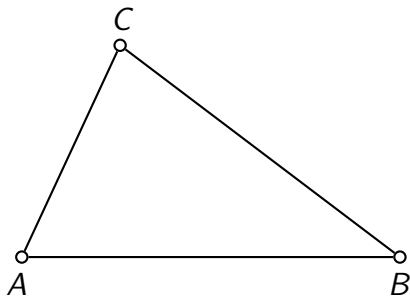
Neka je S presjek dužina \overline{AM} i \overline{BN} . Nađite omjere u kojima točka S dijeli dužine \overline{AM} i \overline{BN} .

Rješenje



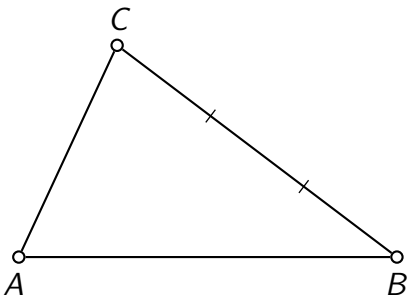
Rješenje

$$|BM| = \frac{2}{3}|BC|$$



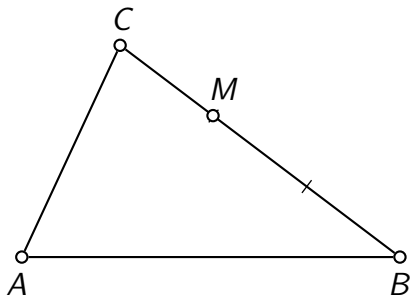
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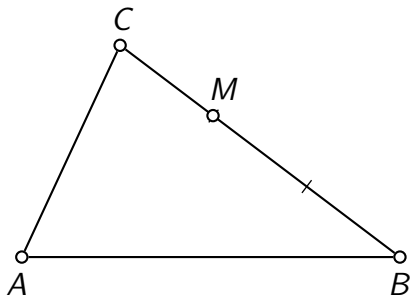


Rješenje

$$|BM| = \frac{2}{3}|BC|$$



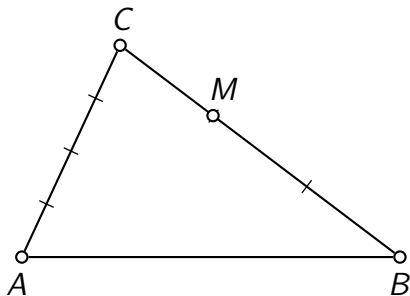
Rješenje



$$|BM| = \frac{2}{3}|BC|$$

$$|CA| = 4|CN|$$

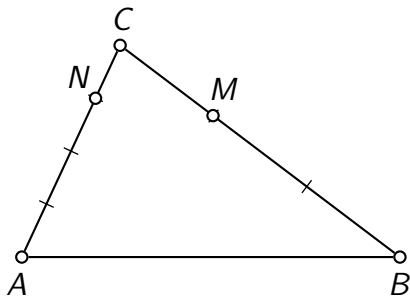
Rješenje



$$|BM| = \frac{2}{3}|BC|$$

$$|CA| = 4|CN|$$

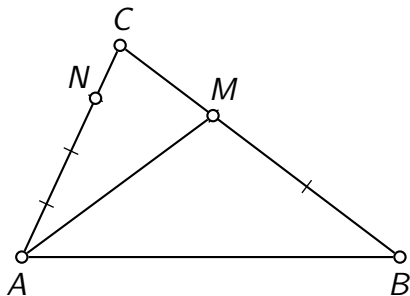
Rješenje



$$|BM| = \frac{2}{3}|BC|$$

$$|CA| = 4|CN|$$

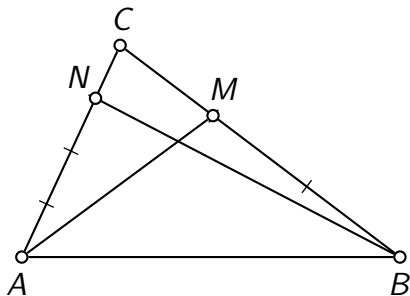
Rješenje



$$|BM| = \frac{2}{3}|BC|$$

$$|CA| = 4|CN|$$

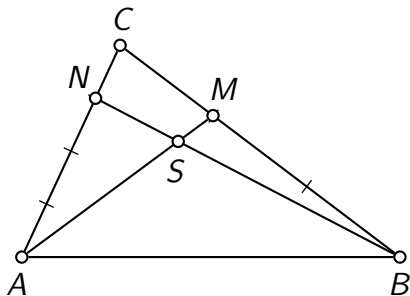
Rješenje



$$|BM| = \frac{2}{3}|BC|$$

$$|CA| = 4|CN|$$

Rješenje



$$|BM| = \frac{2}{3}|BC|$$

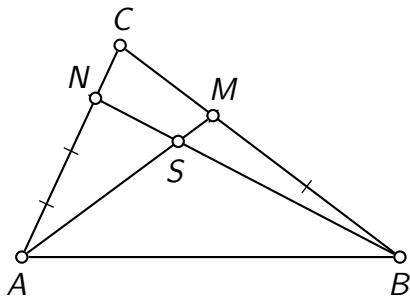
$$|CA| = 4|CN|$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|CA| = 4|CN|$$



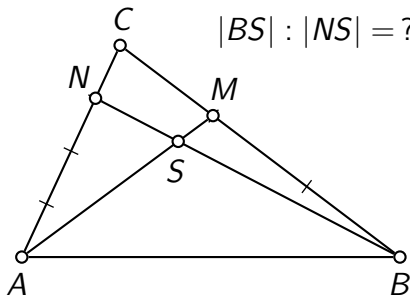
Rješenje

$$|AS| : |MS| = ?$$

$$|BS| : |NS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|CA| = 4|CN|$$



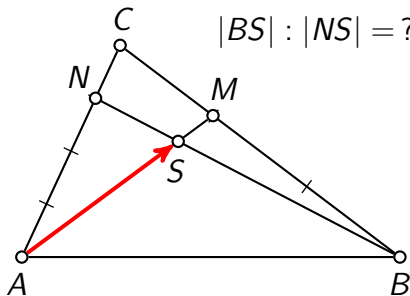
Rješenje

$$|AS| : |MS| = ?$$

$$|BS| : |NS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|CA| = 4|CN|$$



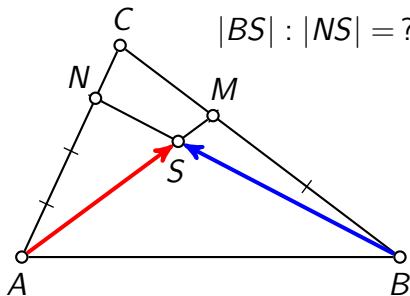
Rješenje

$$|AS| : |MS| = ?$$

$$|BS| : |NS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|CA| = 4|CN|$$



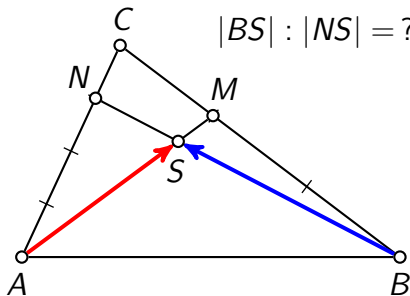
Rješenje

$$|AS| : |MS| = ?$$

$$|BS| : |NS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|CA| = 4|CN|$$



Odabrana baza: $B = (\overrightarrow{CA}, \overrightarrow{CB})$

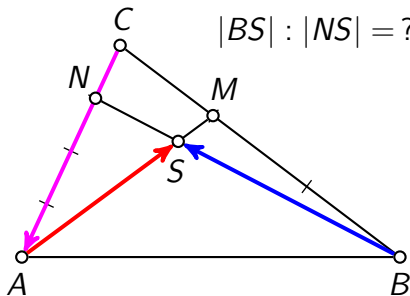
Rješenje

$$|AS| : |MS| = ?$$

$$|BS| : |NS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|CA| = 4|CN|$$



Odabrana baza: $B = (\overrightarrow{CA}, \overrightarrow{CB})$

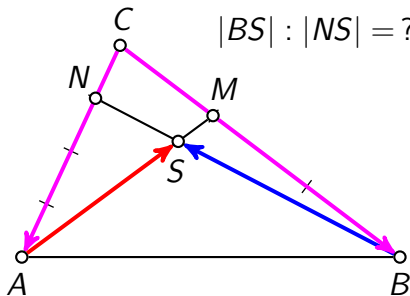
Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN|$$



Odabrana baza: $B = (\vec{CA}, \vec{CB})$

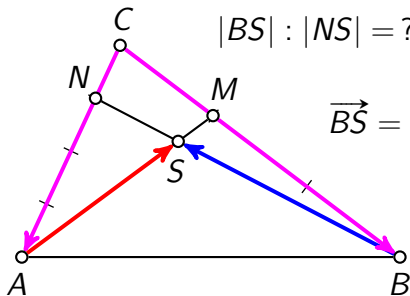
Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN|$$



$$\vec{BS} = \mu \vec{BN}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

Rješenje

$$|AS| : |MS| = ?$$

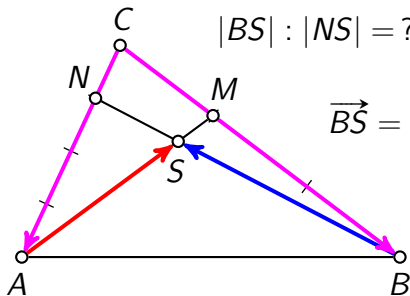
$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN|$$

$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $\mathcal{B} = (\vec{CA}, \vec{CB})$



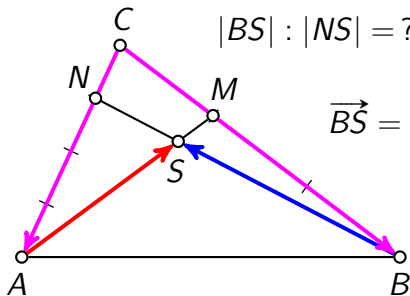
Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN|$$



$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \mu \vec{BN}$$

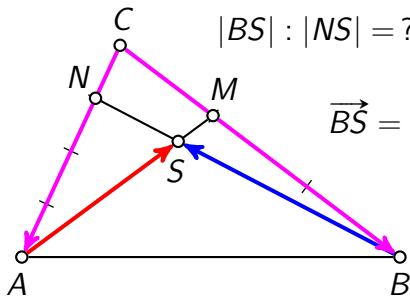
Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN|$$



$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $\mathcal{B} = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \mu \vec{BN} = \mu \left(\right)$$

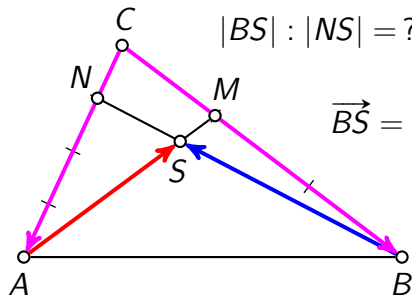
Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN|$$



$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $\mathcal{B} = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \mu \vec{BN} = \mu (\vec{BC}$$

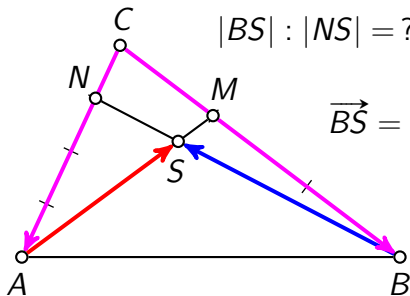
Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN|$$



$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $\mathcal{B} = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \mu \vec{BN} = \mu (\vec{BC} +$$

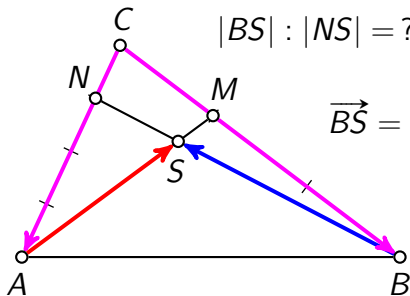
Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN|$$



$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $\mathcal{B} = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \mu \vec{BN} = \mu (\vec{BC} + \vec{CN})$$

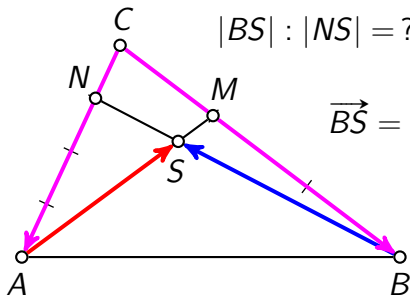
Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN|$$



$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $\mathcal{B} = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \mu \vec{BN} = \mu (\vec{BC} + \vec{CN}) = \mu ($$

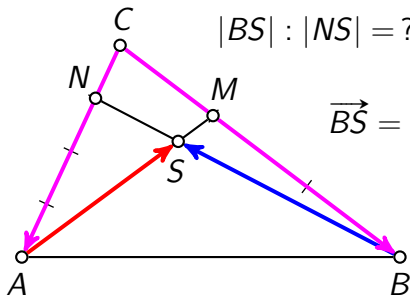
Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN|$$



$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $\mathcal{B} = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \mu \vec{BN} = \mu (\vec{BC} + \vec{CN}) = \mu (-\vec{CB})$$

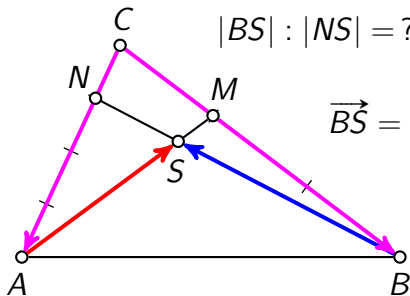
Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN|$$



$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $\mathcal{B} = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \mu \vec{BN} = \mu (\vec{BC} + \vec{CN}) = \mu (-\vec{CB} +$$

Rješenje

$$|AS| : |MS| = ?$$

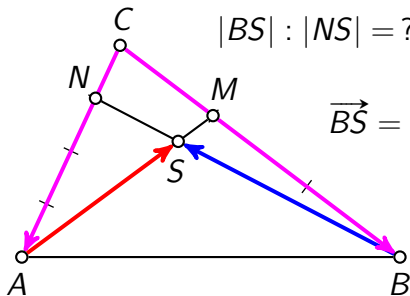
$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $\mathcal{B} = (\vec{CA}, \vec{CB})$



$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} +$$

Rješenje

$$|AS| : |MS| = ?$$

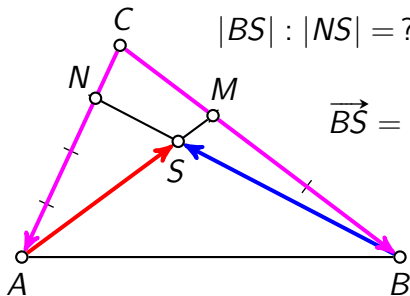
$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$



$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu\left(-\vec{CB} + \frac{1}{4}\vec{CA}\right)$$

Rješenje

$$|AS| : |MS| = ?$$

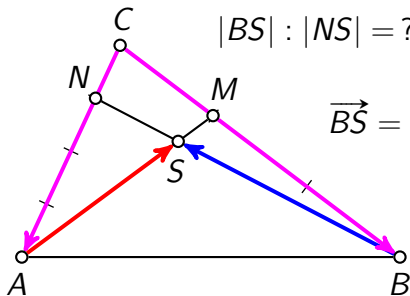
$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$



$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu\left(-\vec{CB} + \frac{1}{4}\vec{CA}\right) = \frac{\mu}{4}\vec{CA}$$

Rješenje

$$|AS| : |MS| = ?$$

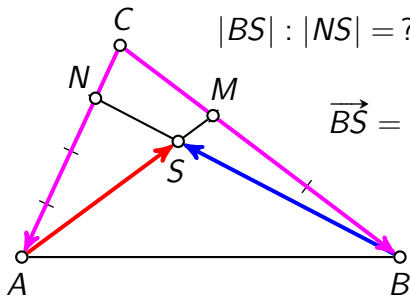
$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$



$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu\left(-\vec{CB} + \frac{1}{4}\vec{CA}\right) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

Rješenje

$$|AS| : |MS| = ?$$

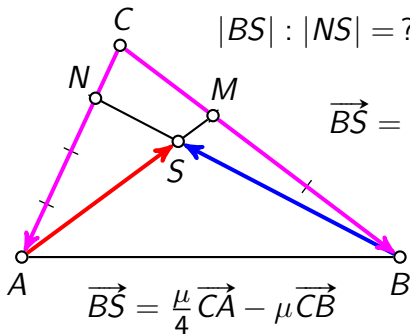
$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$



$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} =$$

Rješenje

$$|AS| : |MS| = ?$$

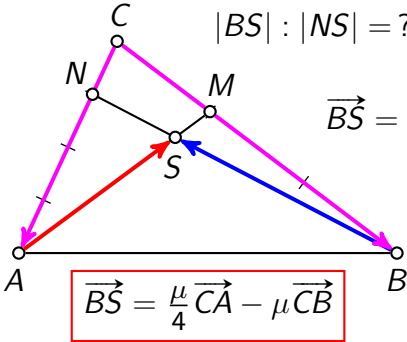
$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$


$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \vec{BA}$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \vec{BA} +$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \vec{BA} + \vec{AS}$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \vec{BA} + \vec{AS} =$$

Rješenje

$$|AS| : |MS| = ?$$

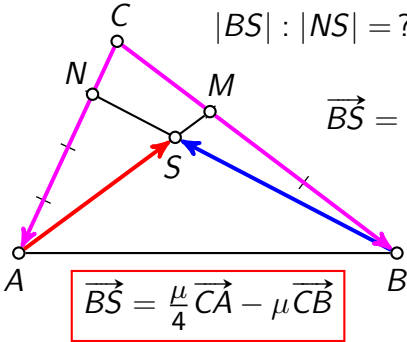
$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$


$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \vec{BA} + \vec{AS} = \vec{BC}$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \vec{BA} + \vec{AS} = \vec{BC} +$$

Rješenje

$$|AS| : |MS| = ?$$

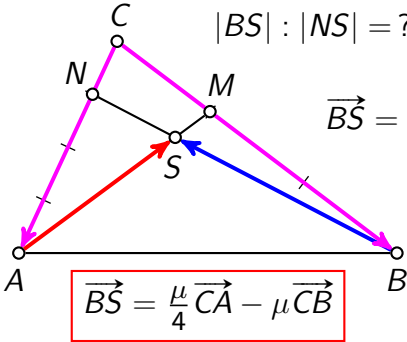
$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$


$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \vec{BA} + \vec{AS} = \vec{BC} + \vec{CA}$$

Rješenje

$$|AS| : |MS| = ?$$

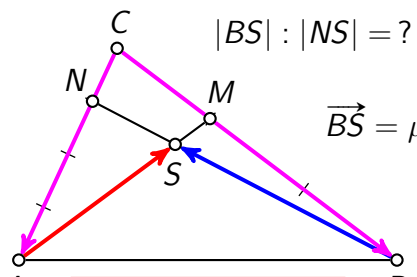
$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$


$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA})$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) +$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda\vec{AM}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) +$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda\vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

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$$\vec{BS} = \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) +$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

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$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

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Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) + \lambda\vec{AM}$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

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Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

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$$\vec{BS} = \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) + \lambda\vec{AM} =$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

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$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

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Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

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$$\begin{aligned} \vec{BS} &= \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) + \lambda\vec{AM} = \\ &= -\vec{CB} \end{aligned}$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

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$$\vec{AS} = \lambda\vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

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$$\begin{aligned} \vec{BS} &= \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) + \lambda\vec{AM} = \\ &= -\vec{CB} + \vec{CA} \end{aligned}$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

$$\vec{AS} = \lambda\vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

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$$\begin{aligned} \vec{BS} &= \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) + \lambda\vec{AM} = \\ &= -\vec{CB} + \vec{CA} + \lambda(\end{aligned}$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

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$$\begin{aligned} \vec{BS} &= \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) + \lambda\vec{AM} = \\ &= -\vec{CB} + \vec{CA} + \lambda(\vec{AC} \end{aligned}$$

Rješenje

$$|AS| : |MS| = ?$$

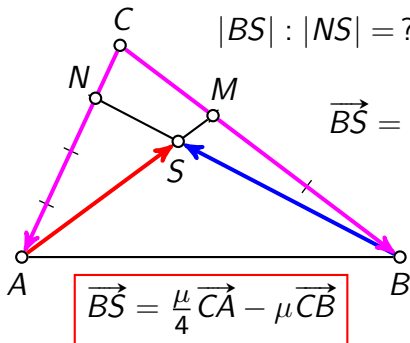
$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda\vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$



$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\begin{aligned} \vec{BS} &= \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) + \lambda\vec{AM} = \\ &= -\vec{CB} + \vec{CA} + \lambda(\vec{AC} + \end{aligned}$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

$$\vec{AS} = \lambda\vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

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$$\begin{aligned} \vec{BS} &= \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) + \lambda\vec{AM} = \\ &= -\vec{CB} + \vec{CA} + \lambda(\vec{AC} + \vec{CM}) \end{aligned}$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

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Odabrana baza: $B = (\vec{CA}, \vec{CB})$

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$$\begin{aligned} \vec{BS} &= \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) + \lambda\vec{AM} = \\ &= -\vec{CB} + \vec{CA} + \lambda(\vec{AC} + \vec{CM}) = -\vec{CB} + \vec{CA} \end{aligned}$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

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Odabrana baza: $B = (\vec{CA}, \vec{CB})$

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$$\vec{BS} = \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) + \lambda\vec{AM} =$$

$$= -\vec{CB} + \vec{CA} + \lambda(\vec{AC} + \vec{CM}) = -\vec{CB} + \vec{CA} - \lambda\vec{CA}$$

Rješenje

$$|AS| : |MS| = ?$$

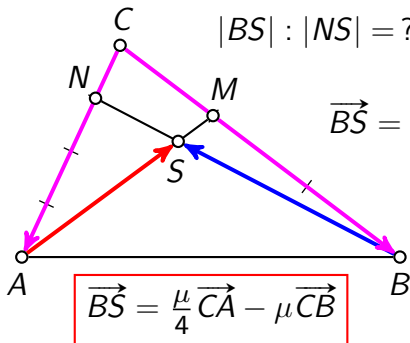
$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda\vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$



$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\begin{aligned} \vec{BS} &= \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) + \lambda\vec{AM} = \\ &= -\vec{CB} + \vec{CA} + \lambda(\vec{AC} + \vec{CM}) = -\vec{CB} + \vec{CA} - \lambda\vec{CA} + \lambda\vec{CM} \end{aligned}$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

$$\vec{AS} = \lambda\vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) + \lambda\vec{AM} =$$

$$= -\vec{CB} + \vec{CA} + \lambda(\vec{AC} + \vec{CM}) = -\vec{CB} + \vec{CA} - \lambda\vec{CA} + \lambda\vec{CM} =$$

Rješenje

$$|AS| : |MS| = ?$$

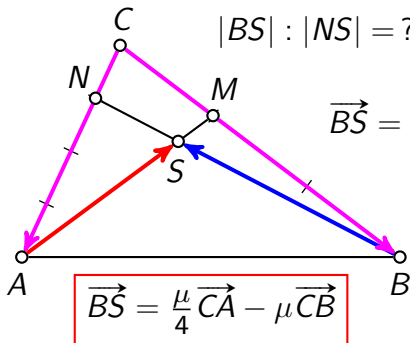
$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda\vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$



$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

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$$\vec{BS} = \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) + \lambda\vec{AM} =$$

$$= -\vec{CB} + \vec{CA} + \lambda(\vec{AC} + \vec{CM}) = -\vec{CB} + \vec{CA} - \lambda\vec{CA} + \lambda\vec{CM} =$$

$$= (1 - \lambda)\vec{CA}$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

$$\vec{AS} = \lambda\vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) + \lambda\vec{AM} =$$

$$= -\vec{CB} + \vec{CA} + \lambda(\vec{AC} + \vec{CM}) = -\vec{CB} + \vec{CA} - \lambda\vec{CA} + \lambda\vec{CM} =$$

$$= (1 - \lambda)\vec{CA} - \vec{CB}$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BM| = \frac{2}{3}|BC|$$

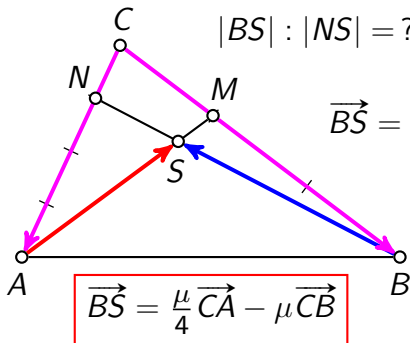
$$|BS| : |NS| = ?$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R}$$

$$\vec{AS} = \lambda\vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$



$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) + \lambda\vec{AM} =$$

$$= -\vec{CB} + \vec{CA} + \lambda(\vec{AC} + \vec{CM}) = -\vec{CB} + \vec{CA} - \lambda\vec{CA} + \lambda\vec{CM} =$$

$$= (1 - \lambda)\vec{CA} - \vec{CB} + \lambda \cdot$$

Rješenje

$$|AS| : |MS| = ?$$

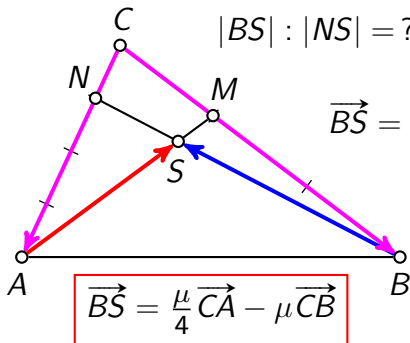
$$|BS| : |NS| = ?$$

$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda\vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$



$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) + \lambda\vec{AM} =$$

$$= -\vec{CB} + \vec{CA} + \lambda(\vec{AC} + \vec{CM}) = -\vec{CB} + \vec{CA} - \lambda\vec{CA} + \lambda\vec{CM} =$$

$$= (1 - \lambda)\vec{CA} - \vec{CB} + \lambda \cdot$$

Rješenje

$$|AS| : |MS| = ?$$

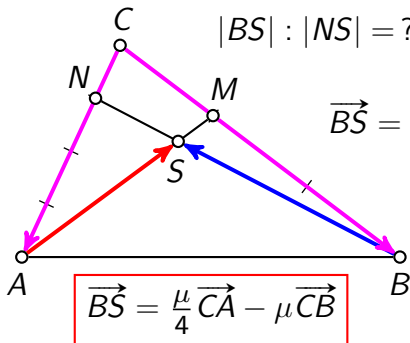
$$|BS| : |NS| = ?$$

$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \overrightarrow{CM} = \frac{1}{3}\overrightarrow{CB}$$

$$|CA| = 4|CN| \rightsquigarrow \overrightarrow{CN} = \frac{1}{4}\overrightarrow{CA}$$

$$\overrightarrow{BS} = \mu\overrightarrow{BN}, \mu \in \mathbb{R} \quad \overrightarrow{AS} = \lambda\overrightarrow{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\overrightarrow{CA}, \overrightarrow{CB})$



$$\overrightarrow{BS} = \frac{\mu}{4}\overrightarrow{CA} - \mu\overrightarrow{CB}$$

$$\overrightarrow{BS} = \mu\overrightarrow{BN} = \mu(\overrightarrow{BC} + \overrightarrow{CN}) = \mu(-\overrightarrow{CB} + \frac{1}{4}\overrightarrow{CA}) = \frac{\mu}{4}\overrightarrow{CA} - \mu\overrightarrow{CB}$$

$$\overrightarrow{BS} = \overrightarrow{BA} + \overrightarrow{AS} = (\overrightarrow{BC} + \overrightarrow{CA}) + \lambda\overrightarrow{AM} =$$

$$= -\overrightarrow{CB} + \overrightarrow{CA} + \lambda(\overrightarrow{AC} + \overrightarrow{CM}) = -\overrightarrow{CB} + \overrightarrow{CA} - \lambda\overrightarrow{CA} + \lambda\overrightarrow{CM} =$$

$$= (1 - \lambda)\overrightarrow{CA} - \overrightarrow{CB} + \lambda \cdot \frac{1}{3}\overrightarrow{CB}$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BS| : |NS| = ?$$

$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda\vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

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$$\vec{BS} = \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) + \lambda\vec{AM} =$$

$$= -\vec{CB} + \vec{CA} + \lambda(\vec{AC} + \vec{CM}) = -\vec{CB} + \vec{CA} - \lambda\vec{CA} + \lambda\vec{CM} =$$

$$= (1 - \lambda)\vec{CA} - \vec{CB} + \lambda \cdot \frac{1}{3}\vec{CB} = (1 - \lambda)\vec{CA}$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BS| : |NS| = ?$$

$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \overrightarrow{CM} = \frac{1}{3}\overrightarrow{CB}$$

$$|CA| = 4|CN| \rightsquigarrow \overrightarrow{CN} = \frac{1}{4}\overrightarrow{CA}$$

$$\overrightarrow{BS} = \mu\overrightarrow{BN}, \mu \in \mathbb{R} \quad \overrightarrow{AS} = \lambda\overrightarrow{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\overrightarrow{CA}, \overrightarrow{CB})$

$$\overrightarrow{BS} = \frac{\mu}{4}\overrightarrow{CA} - \mu\overrightarrow{CB}$$

$$\overrightarrow{BS} = \mu\overrightarrow{BN} = \mu(\overrightarrow{BC} + \overrightarrow{CN}) = \mu(-\overrightarrow{CB} + \frac{1}{4}\overrightarrow{CA}) = \frac{\mu}{4}\overrightarrow{CA} - \mu\overrightarrow{CB}$$

$$\overrightarrow{BS} = \overrightarrow{BA} + \overrightarrow{AS} = (\overrightarrow{BC} + \overrightarrow{CA}) + \lambda\overrightarrow{AM} =$$

$$= -\overrightarrow{CB} + \overrightarrow{CA} + \lambda(\overrightarrow{AC} + \overrightarrow{CM}) = -\overrightarrow{CB} + \overrightarrow{CA} - \lambda\overrightarrow{CA} + \lambda\overrightarrow{CM} =$$

$$= (1 - \lambda)\overrightarrow{CA} - \overrightarrow{CB} + \lambda \cdot \frac{1}{3}\overrightarrow{CB} = (1 - \lambda)\overrightarrow{CA} + \left(\frac{\lambda}{3} - 1\right)\overrightarrow{CB}$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BS| : |NS| = ?$$

$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda\vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) + \lambda\vec{AM} =$$

$$= -\vec{CB} + \vec{CA} + \lambda(\vec{AC} + \vec{CM}) = -\vec{CB} + \vec{CA} - \lambda\vec{CA} + \lambda\vec{CM} =$$

$$= (1 - \lambda)\vec{CA} - \vec{CB} + \lambda \cdot \frac{1}{3}\vec{CB} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

Rješenje

$$|AS| : |MS| = ?$$

$$|BS| : |NS| = ?$$

$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda\vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

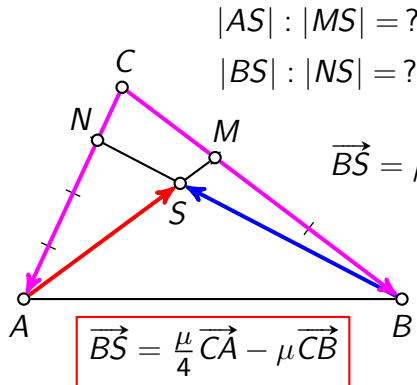
$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \mu\vec{BN} = \mu(\vec{BC} + \vec{CN}) = \mu(-\vec{CB} + \frac{1}{4}\vec{CA}) = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\vec{BS} = \vec{BA} + \vec{AS} = (\vec{BC} + \vec{CA}) + \lambda\vec{AM} =$$

$$= -\vec{CB} + \vec{CA} + \lambda(\vec{AC} + \vec{CM}) = -\vec{CB} + \vec{CA} - \lambda\vec{CA} + \lambda\vec{CM} =$$

$$= (1 - \lambda)\vec{CA} - \vec{CB} + \lambda \cdot \frac{1}{3}\vec{CB} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$



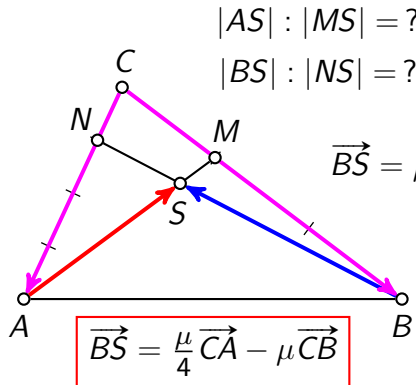
$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda \vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$



$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

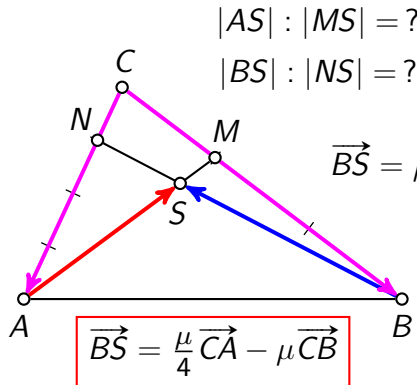
$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda \vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

$$\frac{\mu}{4} =$$



$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

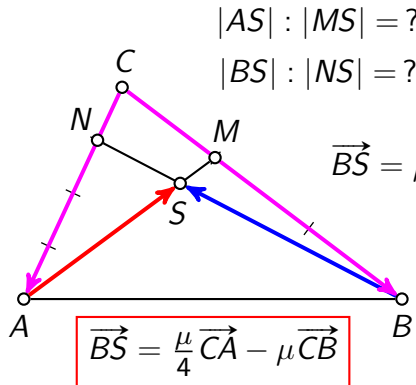
$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda \vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

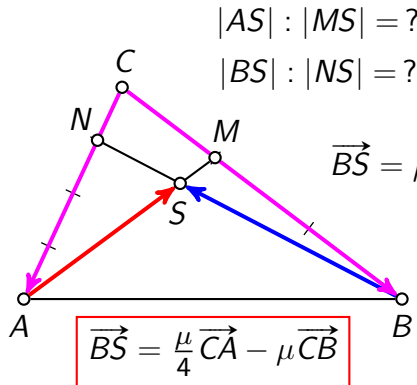
$$\frac{\mu}{4} = 1 - \lambda$$



$$\overrightarrow{BS} = (1 - \lambda)\overrightarrow{CA} + \left(\frac{\lambda}{3} - 1\right)\overrightarrow{CB}$$

$$\frac{\mu}{4} = 1 - \lambda$$

$$-\mu =$$



$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

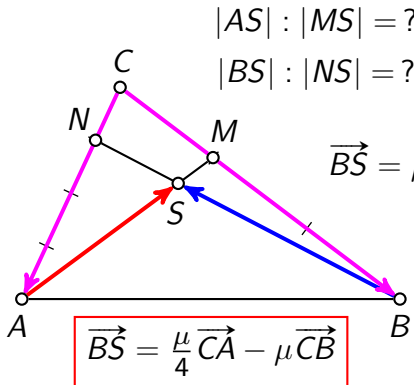
$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda \vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

$$\frac{\mu}{4} = 1 - \lambda$$

$$-\mu = \frac{\lambda}{3} - 1$$



$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

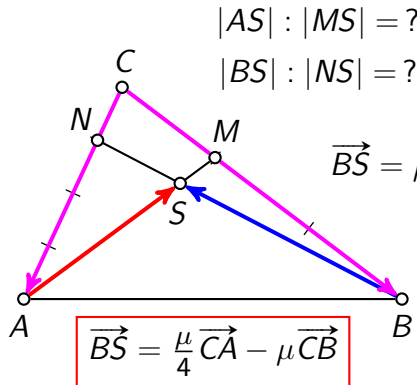
$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda \vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

$$\left. \begin{array}{l} \frac{\mu}{4} = 1 - \lambda \\ -\mu = \frac{\lambda}{3} - 1 \end{array} \right\}$$



$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

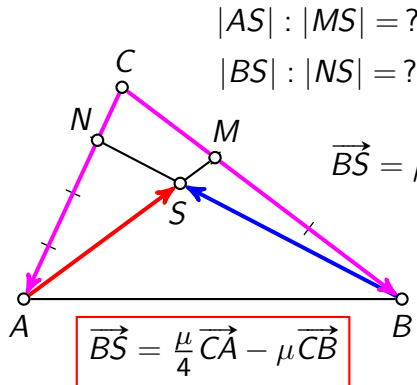
$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda \vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

$$\left. \begin{array}{l} \frac{\mu}{4} = 1 - \lambda \\ -\mu = \frac{\lambda}{3} - 1 \end{array} \right\} / \cdot 4$$



$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda \vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

$$\left. \begin{array}{l} \frac{\mu}{4} = 1 - \lambda \\ -\mu = \frac{\lambda}{3} - 1 \end{array} \right\} \begin{array}{l} / \cdot 4 \\ / \cdot 3 \end{array}$$

$$|AS| : |MS| = ?$$

$$|BS| : |NS| = ?$$

$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

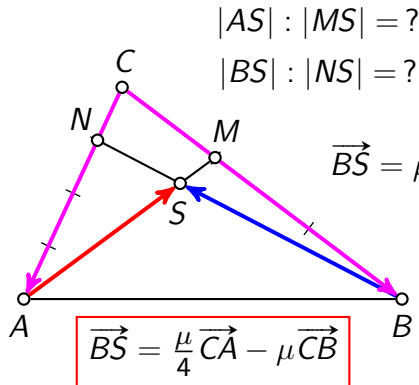
$$\vec{BS} = \mu\vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda\vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

$$\vec{BS} = \frac{\mu}{4}\vec{CA} - \mu\vec{CB}$$

$$\left. \begin{array}{l} \frac{\mu}{4} = 1 - \lambda \\ -\mu = \frac{\lambda}{3} - 1 \end{array} \right\} \begin{array}{l} / \cdot 4 \\ / \cdot 3 \end{array} \rightsquigarrow 4\lambda + \mu = 4$$



$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

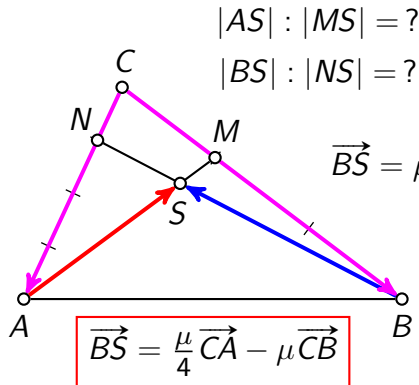
$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda \vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

$$\left. \begin{array}{l} \frac{\mu}{4} = 1 - \lambda \\ -\mu = \frac{\lambda}{3} - 1 \end{array} \right\} \begin{array}{l} / \cdot 4 \\ / \cdot 3 \end{array} \rightsquigarrow \begin{array}{l} 4\lambda + \mu = 4 \\ \lambda + 3\mu = 3 \end{array}$$



$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

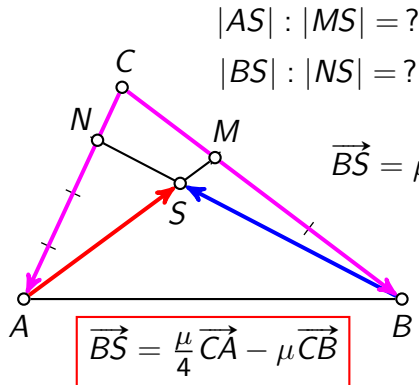
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$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda \vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

$$\left. \begin{array}{l} \frac{\mu}{4} = 1 - \lambda \\ -\mu = \frac{\lambda}{3} - 1 \end{array} \right\} \begin{array}{l} / \cdot 4 \\ / \cdot 3 \end{array} \rightsquigarrow \left. \begin{array}{l} 4\lambda + \mu = 4 \\ \lambda + 3\mu = 3 \end{array} \right\}$$



$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

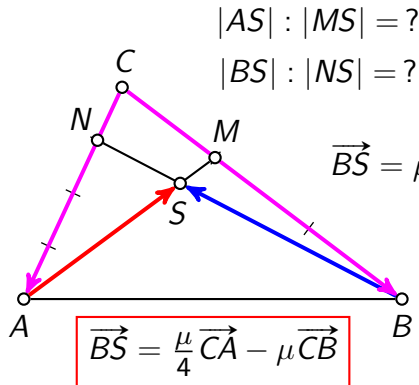
$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda \vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

$$\left. \begin{array}{l} \frac{\mu}{4} = 1 - \lambda \\ -\mu = \frac{\lambda}{3} - 1 \end{array} \right\} \begin{array}{l} / \cdot 4 \\ / \cdot 3 \end{array} \rightsquigarrow \left. \begin{array}{l} 4\lambda + \mu = 4 \\ \lambda + 3\mu = 3 \end{array} \right\} \rightsquigarrow \lambda = \frac{9}{11}$$



$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

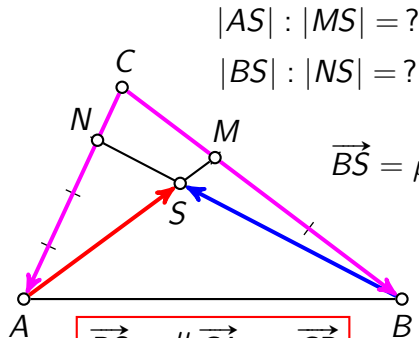
$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda \vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

$$\left. \begin{array}{l} \frac{\mu}{4} = 1 - \lambda \\ -\mu = \frac{\lambda}{3} - 1 \end{array} \right\} \begin{array}{l} / \cdot 4 \\ / \cdot 3 \end{array} \rightsquigarrow \left. \begin{array}{l} 4\lambda + \mu = 4 \\ \lambda + 3\mu = 3 \end{array} \right\} \rightsquigarrow \begin{array}{l} \lambda = \frac{9}{11} \\ \mu = \frac{8}{11} \end{array}$$



$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda \vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

$$\left. \begin{array}{l} \frac{\mu}{4} = 1 - \lambda \\ -\mu = \frac{\lambda}{3} - 1 \end{array} \right\} \begin{array}{l} / \cdot 4 \\ / \cdot 3 \end{array}$$

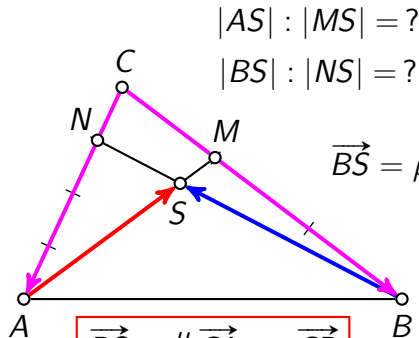
\rightsquigarrow

$$\left. \begin{array}{l} 4\lambda + \mu = 4 \\ \lambda + 3\mu = 3 \end{array} \right\}$$

\rightsquigarrow

$$\left. \begin{array}{l} \lambda = \frac{9}{11} \\ \mu = \frac{8}{11} \end{array} \right\}$$

$$\vec{AS} = \frac{9}{11}\vec{AM}$$



$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

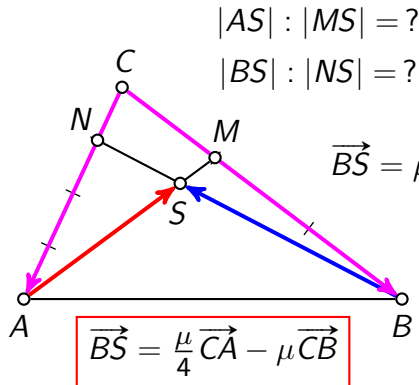
$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda \vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

$$\left. \begin{array}{l} \frac{\mu}{4} = 1 - \lambda \\ -\mu = \frac{\lambda}{3} - 1 \end{array} \right\} \begin{array}{l} / \cdot 4 \\ / \cdot 3 \end{array} \rightsquigarrow \left. \begin{array}{l} 4\lambda + \mu = 4 \\ \lambda + 3\mu = 3 \end{array} \right\} \rightsquigarrow \begin{array}{l} \lambda = \frac{9}{11} \\ \mu = \frac{8}{11} \end{array}$$

$$\vec{AS} = \frac{9}{11}\vec{AM} \rightsquigarrow |AS| : |MS| =$$



$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \overrightarrow{CM} = \frac{1}{3}\overrightarrow{CB}$$

$$|CA| = 4|CN| \rightsquigarrow \overrightarrow{CN} = \frac{1}{4}\overrightarrow{CA}$$

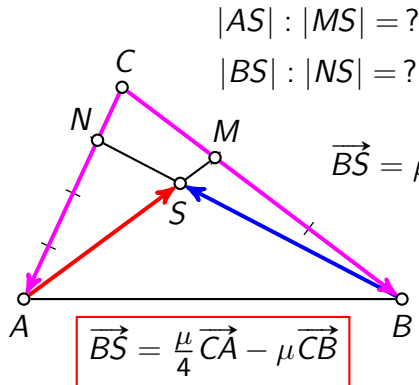
$$\overrightarrow{BS} = \mu \overrightarrow{BN}, \mu \in \mathbb{R} \quad \overrightarrow{AS} = \lambda \overrightarrow{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\overrightarrow{CA}, \overrightarrow{CB})$

$$\overrightarrow{BS} = (1 - \lambda)\overrightarrow{CA} + \left(\frac{\lambda}{3} - 1\right)\overrightarrow{CB}$$

$$\left. \begin{array}{l} \frac{\mu}{4} = 1 - \lambda \\ -\mu = \frac{\lambda}{3} - 1 \end{array} \right\} \begin{array}{l} / \cdot 4 \\ / \cdot 3 \end{array} \rightsquigarrow \left. \begin{array}{l} 4\lambda + \mu = 4 \\ \lambda + 3\mu = 3 \end{array} \right\} \rightsquigarrow \begin{array}{l} \lambda = \frac{9}{11} \\ \mu = \frac{8}{11} \end{array}$$

$$\overrightarrow{AS} = \frac{9}{11}\overrightarrow{AM} \rightsquigarrow |AS| : |MS| = 9 : 2$$



$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

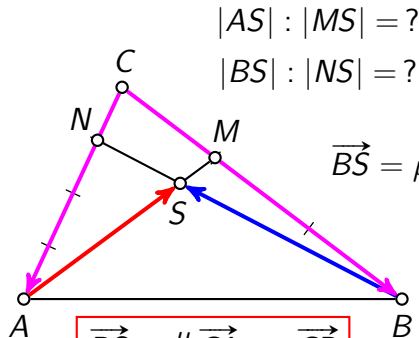
$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda \vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

$$\left. \begin{array}{l} \frac{\mu}{4} = 1 - \lambda \\ -\mu = \frac{\lambda}{3} - 1 \end{array} \right\} \begin{array}{l} / \cdot 4 \\ / \cdot 3 \end{array} \rightsquigarrow \left. \begin{array}{l} 4\lambda + \mu = 4 \\ \lambda + 3\mu = 3 \end{array} \right\} \rightsquigarrow \begin{array}{l} \lambda = \frac{9}{11} \\ \mu = \frac{8}{11} \end{array}$$

$$\vec{AS} = \frac{9}{11}\vec{AM} \rightsquigarrow |AS| : |MS| = 9 : 2 \rightsquigarrow \vec{AS} = -\frac{9}{2}\vec{MS}$$



$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda \vec{AM}, \lambda \in \mathbb{R}$$

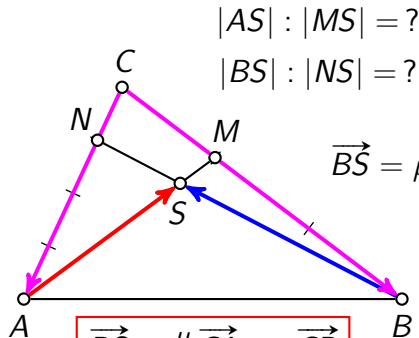
Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

$$\left. \begin{array}{l} \frac{\mu}{4} = 1 - \lambda \\ -\mu = \frac{\lambda}{3} - 1 \end{array} \right\} \begin{array}{l} / \cdot 4 \\ / \cdot 3 \end{array} \rightsquigarrow \left. \begin{array}{l} 4\lambda + \mu = 4 \\ \lambda + 3\mu = 3 \end{array} \right\} \rightsquigarrow \begin{array}{l} \lambda = \frac{9}{11} \\ \mu = \frac{8}{11} \end{array}$$

$$\vec{AS} = \frac{9}{11}\vec{AM} \rightsquigarrow |AS| : |MS| = 9 : 2 \rightsquigarrow \vec{AS} = -\frac{9}{2}\vec{MS}$$

$$\vec{BS} = \frac{8}{11}\vec{BN}$$



$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda \vec{AM}, \lambda \in \mathbb{R}$$

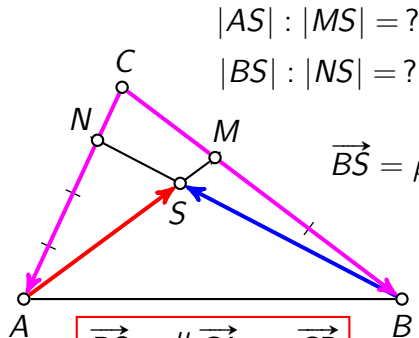
Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

$$\left. \begin{array}{l} \frac{\mu}{4} = 1 - \lambda \\ -\mu = \frac{\lambda}{3} - 1 \end{array} \right\} \begin{array}{l} / \cdot 4 \\ / \cdot 3 \end{array} \rightsquigarrow \left. \begin{array}{l} 4\lambda + \mu = 4 \\ \lambda + 3\mu = 3 \end{array} \right\} \rightsquigarrow \begin{array}{l} \lambda = \frac{9}{11} \\ \mu = \frac{8}{11} \end{array}$$

$$\vec{AS} = \frac{9}{11}\vec{AM} \rightsquigarrow |AS| : |MS| = 9 : 2 \rightsquigarrow \vec{AS} = -\frac{9}{2}\vec{MS}$$

$$\vec{BS} = \frac{8}{11}\vec{BN} \rightsquigarrow |BS| : |NS| =$$



$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda \vec{AM}, \lambda \in \mathbb{R}$$

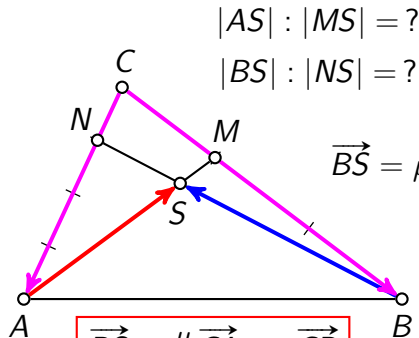
Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

$$\left. \begin{array}{l} \frac{\mu}{4} = 1 - \lambda \\ -\mu = \frac{\lambda}{3} - 1 \end{array} \right\} \begin{array}{l} / \cdot 4 \\ / \cdot 3 \end{array} \rightsquigarrow \left. \begin{array}{l} 4\lambda + \mu = 4 \\ \lambda + 3\mu = 3 \end{array} \right\} \rightsquigarrow \begin{array}{l} \lambda = \frac{9}{11} \\ \mu = \frac{8}{11} \end{array}$$

$$\vec{AS} = \frac{9}{11}\vec{AM} \rightsquigarrow |AS| : |MS| = 9 : 2 \rightsquigarrow \vec{AS} = -\frac{9}{2}\vec{MS}$$

$$\vec{BS} = \frac{8}{11}\vec{BN} \rightsquigarrow |BS| : |NS| = 8 : 3$$



$$|BM| = \frac{2}{3}|BC| \rightsquigarrow \vec{CM} = \frac{1}{3}\vec{CB}$$

$$|CA| = 4|CN| \rightsquigarrow \vec{CN} = \frac{1}{4}\vec{CA}$$

$$\vec{BS} = \mu \vec{BN}, \mu \in \mathbb{R} \quad \vec{AS} = \lambda \vec{AM}, \lambda \in \mathbb{R}$$

Odabrana baza: $B = (\vec{CA}, \vec{CB})$

$$\vec{BS} = (1 - \lambda)\vec{CA} + \left(\frac{\lambda}{3} - 1\right)\vec{CB}$$

$$\left. \begin{array}{l} \frac{\mu}{4} = 1 - \lambda \\ -\mu = \frac{\lambda}{3} - 1 \end{array} \right\} \begin{array}{l} / \cdot 4 \\ / \cdot 3 \end{array} \rightsquigarrow \left. \begin{array}{l} 4\lambda + \mu = 4 \\ \lambda + 3\mu = 3 \end{array} \right\} \rightsquigarrow \begin{array}{l} \lambda = \frac{9}{11} \\ \mu = \frac{8}{11} \end{array}$$

$$\vec{AS} = \frac{9}{11}\vec{AM} \rightsquigarrow |AS| : |MS| = 9 : 2 \rightsquigarrow \vec{AS} = -\frac{9}{2}\vec{MS}$$

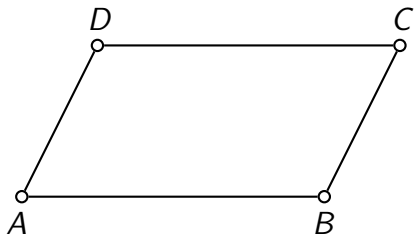
$$\vec{BS} = \frac{8}{11}\vec{BN} \rightsquigarrow |BS| : |NS| = 8 : 3 \rightsquigarrow \vec{BS} = -\frac{8}{3}\vec{NS}$$

treći zadatak

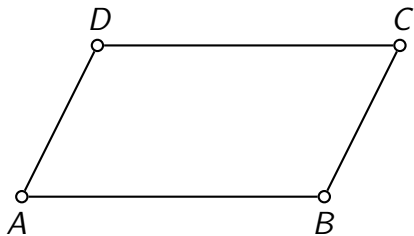
Zadatak 3

Zadan je paralelogram $ABCD$ i točka T na stranici \overline{AB} takva da je $|AT| = \frac{1}{n}|AB|$ za neki realni broj $n > 1$. Neka je S presjek dužina \overline{AC} i \overline{TD} . Odredite omjer u kojemu točka S dijeli dužinu \overline{AC} .

Rješenje

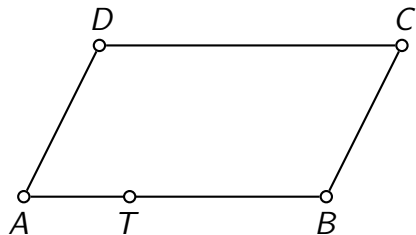


Rješenje



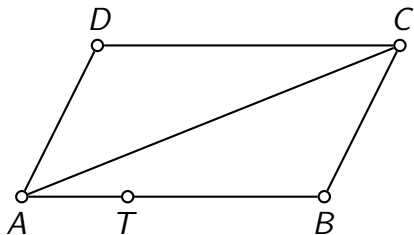
$$|AT| = \frac{1}{9}|AB|$$

Rješenje



$$|AT| = \frac{1}{n}|AB|$$

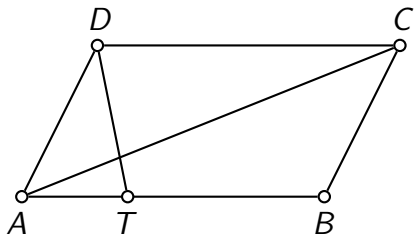
Rješenje



$$|AT| = \frac{1}{n}|AB|$$

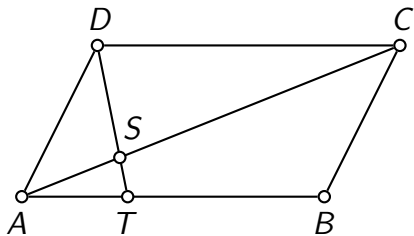
Rješenje

$$|AT| = \frac{1}{n}|AB|$$



Rješenje

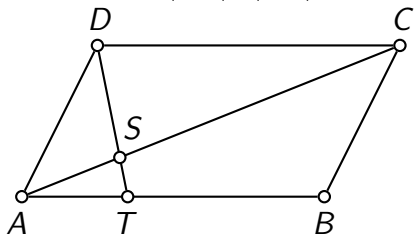
$$|AT| = \frac{1}{n}|AB|$$



Rješenje

$$|AS| : |CS| = ?$$

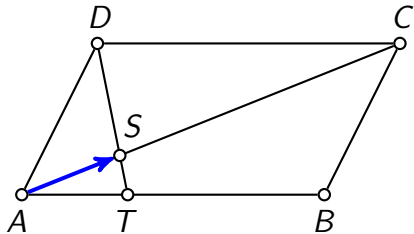
$$|AT| = \frac{1}{n}|AB|$$



Rješenje

$$|AS| : |CS| = ?$$

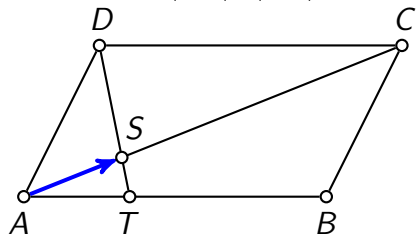
$$|AT| = \frac{1}{n}|AB|$$



Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n} |AB|$$

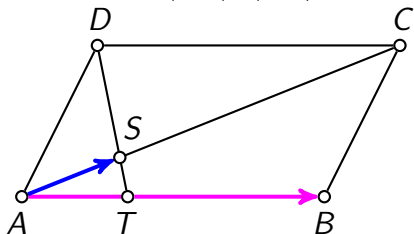


Odabrana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n} |AB|$$

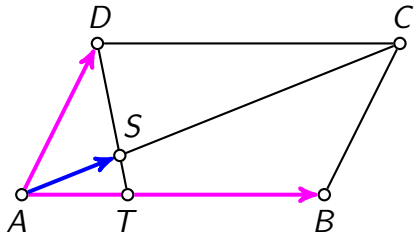


Odabrana baza: $\mathcal{B} = (\overrightarrow{AB}, \overrightarrow{AD})$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n} |AB|$$

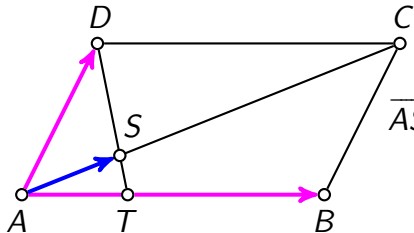


Odabrana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n}|AB|$$



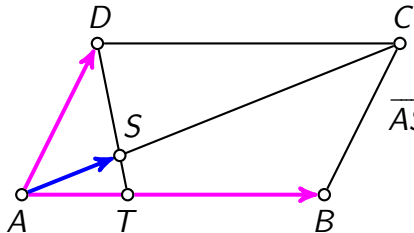
Odabrana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{AS} = \lambda \vec{AC}$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n} |AB|$$



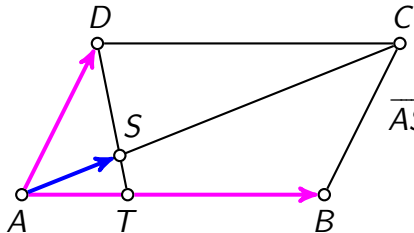
Odabrana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{AS} = \lambda \vec{AC}, \lambda \in \mathbb{R}$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n} |AB|$$



Odabrana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

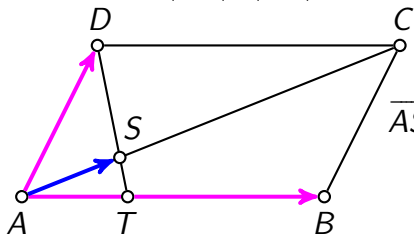
$$\vec{AS} = \lambda \vec{AC}, \lambda \in \mathbb{R}$$

$$\vec{AS} = \lambda \vec{AC}$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n} |AB|$$



Odabrana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

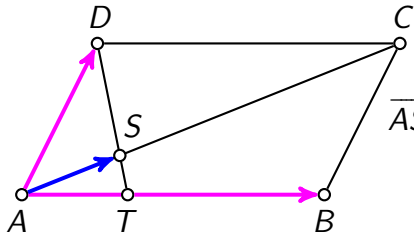
$$\vec{AS} = \lambda \vec{AC}, \lambda \in \mathbb{R}$$

$$\vec{AS} = \lambda \vec{AC} = \lambda ($$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n} |AB|$$



Odabrana baza: $\mathcal{B} = (\overrightarrow{AB}, \overrightarrow{AD})$

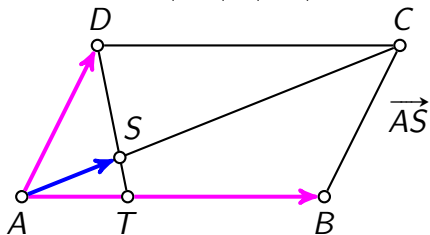
$$\overrightarrow{AS} = \lambda \overrightarrow{AC}, \lambda \in \mathbb{R}$$

$$\overrightarrow{AS} = \lambda \overrightarrow{AC} = \lambda (\overrightarrow{AB} + \overrightarrow{AD})$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n} |AB|$$



Odabrana baza: $\mathcal{B} = (\overrightarrow{AB}, \overrightarrow{AD})$

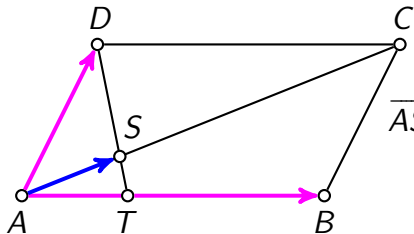
$$\overrightarrow{AS} = \lambda \overrightarrow{AC}, \lambda \in \mathbb{R}$$

$$\overrightarrow{AS} = \lambda \overrightarrow{AC} = \lambda (\overrightarrow{AB} +$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n}|AB|$$



Odabrana baza: $\mathcal{B} = (\overrightarrow{AB}, \overrightarrow{AD})$

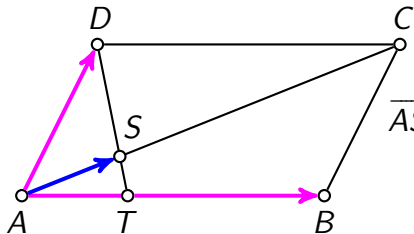
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$$\overrightarrow{AS} = \lambda \overrightarrow{AC} = \lambda (\overrightarrow{AB} + \overrightarrow{AD})$$

Rješenje

$$|AS| : |CS| = ?$$

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Odabrana baza: $\mathcal{B} = (\overrightarrow{AB}, \overrightarrow{AD})$

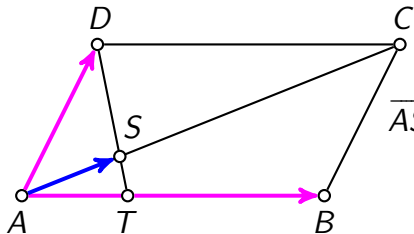
$$\overrightarrow{AS} = \lambda \overrightarrow{AC}, \lambda \in \mathbb{R}$$

$$\overrightarrow{AS} = \lambda \overrightarrow{AC} = \lambda (\overrightarrow{AB} + \overrightarrow{AD}) = \lambda \overrightarrow{AB}$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n} |AB|$$



Odabrana baza: $\mathcal{B} = (\overrightarrow{AB}, \overrightarrow{AD})$

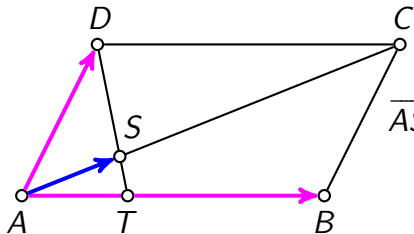
$$\overrightarrow{AS} = \lambda \overrightarrow{AC}, \lambda \in \mathbb{R}$$

$$\overrightarrow{AS} = \lambda \overrightarrow{AC} = \lambda (\overrightarrow{AB} + \overrightarrow{AD}) = \lambda \overrightarrow{AB} + \lambda \overrightarrow{AD}$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n} |AB|$$



Odabrana baza: $\mathcal{B} = (\overrightarrow{AB}, \overrightarrow{AD})$

$$\overrightarrow{AS} = \lambda \overrightarrow{AC}, \lambda \in \mathbb{R}$$

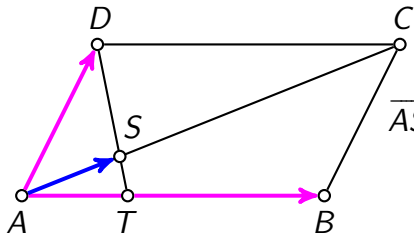
$$\overrightarrow{AS} = \lambda \overrightarrow{AB} + \lambda \overrightarrow{AD}$$

$$\overrightarrow{AS} = \lambda \overrightarrow{AC} = \lambda (\overrightarrow{AB} + \overrightarrow{AD}) = \lambda \overrightarrow{AB} + \lambda \overrightarrow{AD}$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n} |AB|$$



Odabrana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{AS} = \lambda \vec{AC}, \lambda \in \mathbb{R}$$

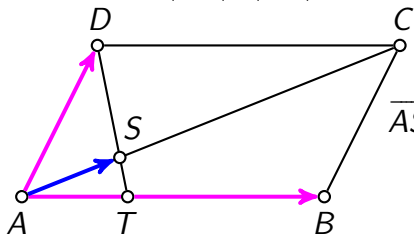
$$\vec{AS} = \lambda \vec{AB} + \lambda \vec{AD}$$

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Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n} |AB|$$



Odabrana baza: $\mathcal{B} = (\overrightarrow{AB}, \overrightarrow{AD})$

$$\overrightarrow{AS} = \lambda \overrightarrow{AC}, \lambda \in \mathbb{R}$$

$$\overrightarrow{AS} = \lambda \overrightarrow{AB} + \lambda \overrightarrow{AD}$$

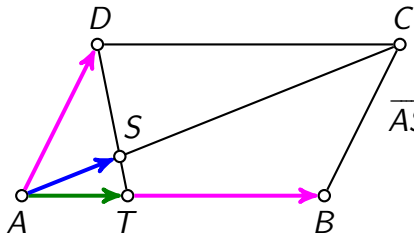
$$\overrightarrow{AS} = \lambda \overrightarrow{AC} = \lambda (\overrightarrow{AB} + \overrightarrow{AD}) = \lambda \overrightarrow{AB} + \lambda \overrightarrow{AD}$$

$$\overrightarrow{AS} =$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n} |AB|$$



Odabrana baza: $\mathcal{B} = (\overrightarrow{AB}, \overrightarrow{AD})$

$$\overrightarrow{AS} = \lambda \overrightarrow{AC}, \lambda \in \mathbb{R}$$

$$\overrightarrow{AS} = \lambda \overrightarrow{AB} + \lambda \overrightarrow{AD}$$

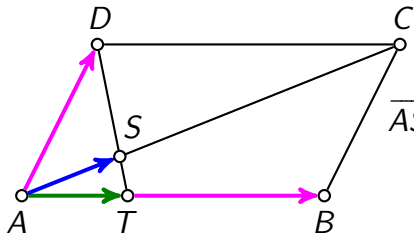
$$\overrightarrow{AS} = \lambda \overrightarrow{AC} = \lambda (\overrightarrow{AB} + \overrightarrow{AD}) = \lambda \overrightarrow{AB} + \lambda \overrightarrow{AD}$$

$$\overrightarrow{AS} = \overrightarrow{AT}$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n} |AB|$$



Odabrana baza: $\mathcal{B} = (\overrightarrow{AB}, \overrightarrow{AD})$

$$\overrightarrow{AS} = \lambda \overrightarrow{AC}, \lambda \in \mathbb{R}$$

$$\overrightarrow{AS} = \lambda \overrightarrow{AB} + \lambda \overrightarrow{AD}$$

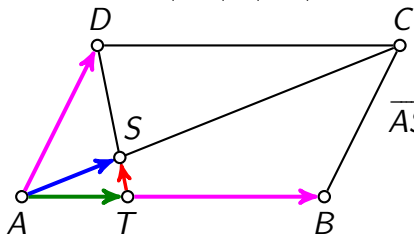
$$\overrightarrow{AS} = \lambda \overrightarrow{AC} = \lambda (\overrightarrow{AB} + \overrightarrow{AD}) = \lambda \overrightarrow{AB} + \lambda \overrightarrow{AD}$$

$$\overrightarrow{AS} = \overrightarrow{AT} +$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n}|AB|$$



Odabrana baza: $\mathcal{B} = (\overrightarrow{AB}, \overrightarrow{AD})$

$$\overrightarrow{AS} = \lambda \overrightarrow{AC}, \lambda \in \mathbb{R}$$

$$\overrightarrow{AS} = \lambda \overrightarrow{AB} + \lambda \overrightarrow{AD}$$

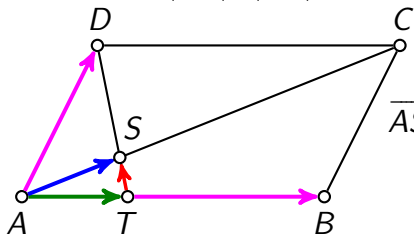
$$\overrightarrow{AS} = \lambda \overrightarrow{AC} = \lambda (\overrightarrow{AB} + \overrightarrow{AD}) = \lambda \overrightarrow{AB} + \lambda \overrightarrow{AD}$$

$$\overrightarrow{AS} = \overrightarrow{AT} + \overrightarrow{TS}$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n}|AB| \rightsquigarrow \vec{AT} = \frac{1}{n}\vec{AB}$$



Odabrana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{AS} = \lambda \vec{AC}, \lambda \in \mathbb{R}$$

$$\vec{AS} = \lambda \vec{AB} + \lambda \vec{AD}$$

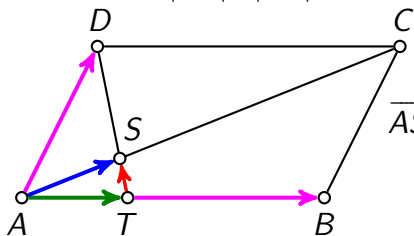
$$\vec{AS} = \lambda \vec{AC} = \lambda (\vec{AB} + \vec{AD}) = \lambda \vec{AB} + \lambda \vec{AD}$$

$$\vec{AS} = \vec{AT} + \vec{TS} =$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n}|AB| \rightsquigarrow \vec{AT} = \frac{1}{n}\vec{AB}$$



Odabrana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{AS} = \lambda \vec{AC}, \lambda \in \mathbb{R}$$

$$\vec{AS} = \lambda \vec{AB} + \lambda \vec{AD}$$

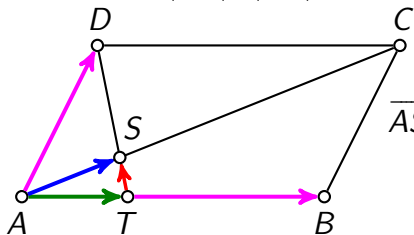
$$\vec{AS} = \lambda \vec{AC} = \lambda (\vec{AB} + \vec{AD}) = \lambda \vec{AB} + \lambda \vec{AD}$$

$$\vec{AS} = \vec{AT} + \vec{TS} = \frac{1}{n}\vec{AB}$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n}|AB| \rightsquigarrow \vec{AT} = \frac{1}{n}\vec{AB}$$



Odabrana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{AS} = \lambda \vec{AC}, \lambda \in \mathbb{R} \quad \vec{TS} = \mu \vec{TD}$$

$$\vec{AS} = \lambda \vec{AB} + \lambda \vec{AD}$$

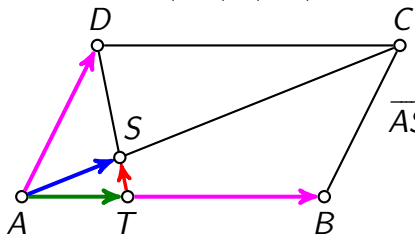
$$\vec{AS} = \lambda \vec{AC} = \lambda (\vec{AB} + \vec{AD}) = \lambda \vec{AB} + \lambda \vec{AD}$$

$$\vec{AS} = \vec{AT} + \vec{TS} = \frac{1}{n}\vec{AB} +$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n}|AB| \rightsquigarrow \vec{AT} = \frac{1}{n}\vec{AB}$$



Odabrana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{AS} = \lambda \vec{AC}, \lambda \in \mathbb{R} \quad \vec{TS} = \mu \vec{TD}, \mu \in \mathbb{R}$$

$$\vec{AS} = \lambda \vec{AB} + \lambda \vec{AD}$$

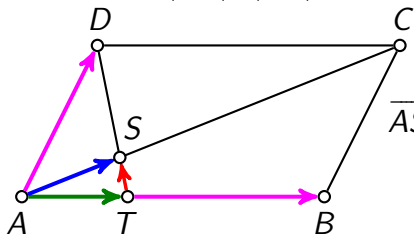
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$$\vec{AS} = \vec{AT} + \vec{TS} = \frac{1}{n}\vec{AB} +$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n}|AB| \rightsquigarrow \vec{AT} = \frac{1}{n}\vec{AB}$$



Odabrana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{AS} = \lambda \vec{AC}, \lambda \in \mathbb{R} \quad \vec{TS} = \mu \vec{TD}, \mu \in \mathbb{R}$$

$$\vec{AS} = \lambda \vec{AB} + \lambda \vec{AD}$$

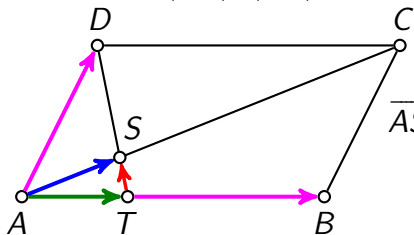
$$\vec{AS} = \lambda \vec{AC} = \lambda (\vec{AB} + \vec{AD}) = \lambda \vec{AB} + \lambda \vec{AD}$$

$$\vec{AS} = \vec{AT} + \vec{TS} = \frac{1}{n}\vec{AB} + \mu \vec{TD}$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n}|AB| \rightsquigarrow \vec{AT} = \frac{1}{n}\vec{AB}$$



Odabrana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{AS} = \lambda \vec{AC}, \lambda \in \mathbb{R} \quad \vec{TS} = \mu \vec{TD}, \mu \in \mathbb{R}$$

$$\vec{AS} = \lambda \vec{AB} + \lambda \vec{AD}$$

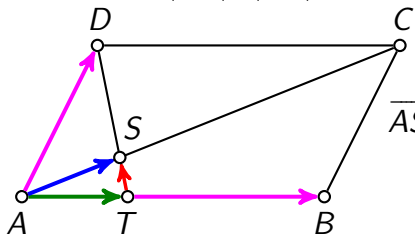
$$\vec{AS} = \lambda \vec{AC} = \lambda (\vec{AB} + \vec{AD}) = \lambda \vec{AB} + \lambda \vec{AD}$$

$$\vec{AS} = \vec{AT} + \vec{TS} = \frac{1}{n}\vec{AB} + \mu \vec{TD} = \frac{1}{n}\vec{AB}$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n}|AB| \rightsquigarrow \vec{AT} = \frac{1}{n}\vec{AB}$$



Odabrana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{AS} = \lambda \vec{AC}, \lambda \in \mathbb{R} \quad \vec{TS} = \mu \vec{TD}, \mu \in \mathbb{R}$$

$$\vec{AS} = \lambda \vec{AB} + \lambda \vec{AD}$$

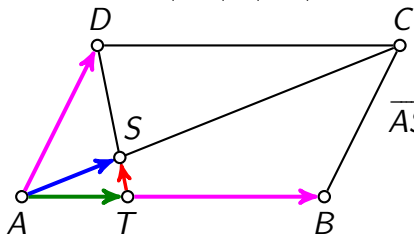
$$\vec{AS} = \lambda \vec{AC} = \lambda (\vec{AB} + \vec{AD}) = \lambda \vec{AB} + \lambda \vec{AD}$$

$$\vec{AS} = \vec{AT} + \vec{TS} = \frac{1}{n}\vec{AB} + \mu \vec{TD} = \frac{1}{n}\vec{AB} + \mu \left($$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n}|AB| \rightsquigarrow \vec{AT} = \frac{1}{n}\vec{AB}$$



Odabrana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{AS} = \lambda \vec{AC}, \lambda \in \mathbb{R} \quad \vec{TS} = \mu \vec{TD}, \mu \in \mathbb{R}$$

$$\vec{AS} = \lambda \vec{AB} + \lambda \vec{AD}$$

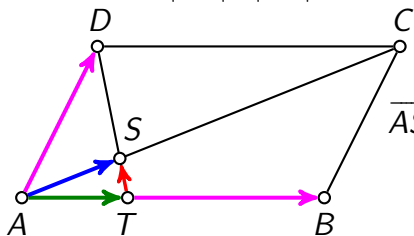
$$\vec{AS} = \lambda \vec{AC} = \lambda (\vec{AB} + \vec{AD}) = \lambda \vec{AB} + \lambda \vec{AD}$$

$$\vec{AS} = \vec{AT} + \vec{TS} = \frac{1}{n}\vec{AB} + \mu \vec{TD} = \frac{1}{n}\vec{AB} + \mu (\vec{TA}$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n}|AB| \rightsquigarrow \vec{AT} = \frac{1}{n}\vec{AB}$$



Odabrana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{AS} = \lambda \vec{AC}, \lambda \in \mathbb{R} \quad \vec{TS} = \mu \vec{TD}, \mu \in \mathbb{R}$$

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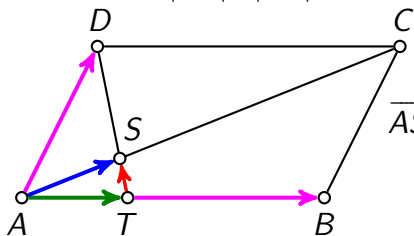
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$$\vec{AS} = \vec{AT} + \vec{TS} = \frac{1}{n}\vec{AB} + \mu \vec{TD} = \frac{1}{n}\vec{AB} + \mu (\vec{TA} +$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n}|AB| \rightsquigarrow \vec{AT} = \frac{1}{n}\vec{AB}$$



Odabrana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{AS} = \lambda \vec{AC}, \lambda \in \mathbb{R} \quad \vec{TS} = \mu \vec{TD}, \mu \in \mathbb{R}$$

$$\vec{AS} = \lambda \vec{AB} + \lambda \vec{AD}$$

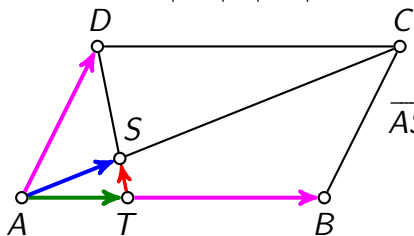
$$\vec{AS} = \lambda \vec{AC} = \lambda (\vec{AB} + \vec{AD}) = \lambda \vec{AB} + \lambda \vec{AD}$$

$$\vec{AS} = \vec{AT} + \vec{TS} = \frac{1}{n}\vec{AB} + \mu \vec{TD} = \frac{1}{n}\vec{AB} + \mu (\vec{TA} + \vec{AD})$$

Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n}|AB| \rightsquigarrow \vec{AT} = \frac{1}{n}\vec{AB}$$



Odabrana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

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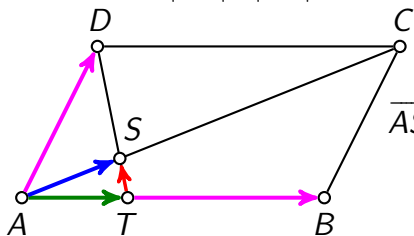
$$\vec{AS} = \lambda \vec{AC} = \lambda (\vec{AB} + \vec{AD}) = \lambda \vec{AB} + \lambda \vec{AD}$$

$$\begin{aligned} \vec{AS} &= \vec{AT} + \vec{TS} = \frac{1}{n}\vec{AB} + \mu \vec{TD} = \frac{1}{n}\vec{AB} + \mu (\vec{TA} + \vec{AD}) = \\ &= \frac{1}{n}\vec{AB} \end{aligned}$$

Rješenje

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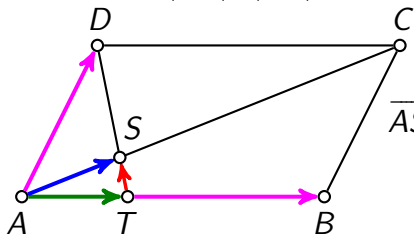
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$$\begin{aligned} \vec{AS} &= \vec{AT} + \vec{TS} = \frac{1}{n}\vec{AB} + \mu \vec{TD} = \frac{1}{n}\vec{AB} + \mu (\vec{TA} + \vec{AD}) = \\ &= \frac{1}{n}\vec{AB} + \mu \vec{TA} \end{aligned}$$

Rješenje

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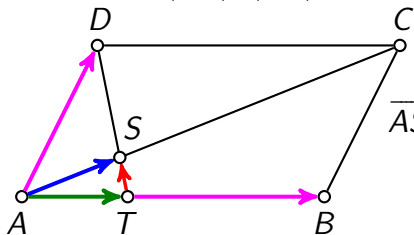
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Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n}|AB| \rightsquigarrow \vec{AT} = \frac{1}{n}\vec{AB}$$



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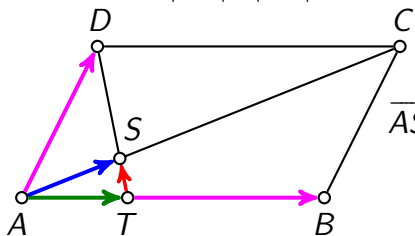
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Rješenje

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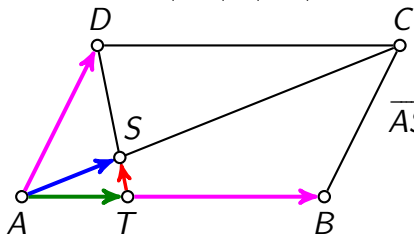
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Rješenje

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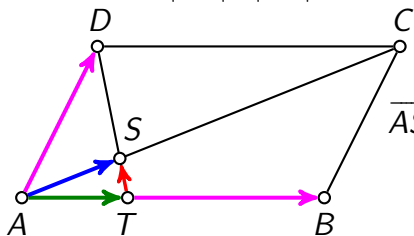
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Rješenje

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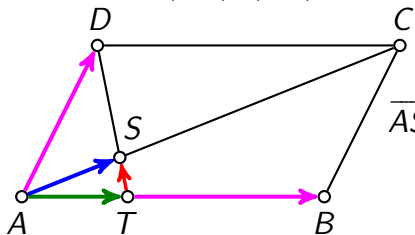
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Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n}|AB| \rightsquigarrow \vec{AT} = \frac{1}{n}\vec{AB}$$



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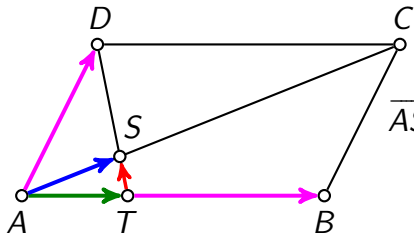
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Rješenje

$$|AS| : |CS| = ?$$

$$|AT| = \frac{1}{n}|AB| \rightsquigarrow \vec{AT} = \frac{1}{n}\vec{AB}$$



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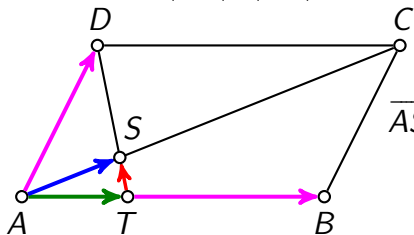
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Rješenje

$$|AS| : |CS| = ?$$

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$$\vec{AS} = \frac{1-\mu}{n} \vec{AB} + \mu \vec{AD}$$

$$\vec{AS} = \lambda \vec{AC} = \lambda (\vec{AB} + \vec{AD}) = \lambda \vec{AB} + \lambda \vec{AD}$$

$$\vec{AS} = \vec{AT} + \vec{TS} = \frac{1}{n} \vec{AB} + \mu \vec{TD} = \frac{1}{n} \vec{AB} + \mu (\vec{TA} + \vec{AD}) =$$

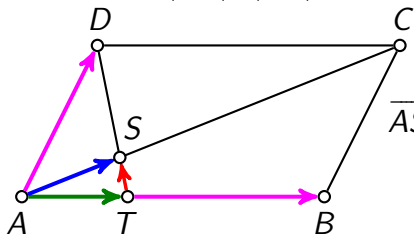
$$= \frac{1}{n} \vec{AB} + \mu \vec{TA} + \mu \vec{AD} = \frac{1}{n} \vec{AB} + \mu \cdot \frac{-1}{n} \vec{AB} + \mu \vec{AD} =$$

$$= \frac{1-\mu}{n} \vec{AB} + \mu \vec{AD}$$

Rješenje

$$|AS| : |CS| = ?$$

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$$\vec{AS} = \frac{1-\mu}{n} \vec{AB} + \mu \vec{AD}$$

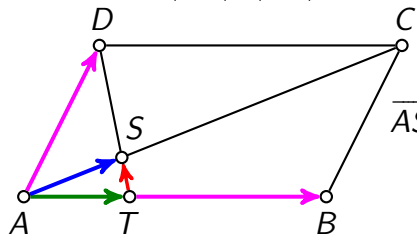
$$\vec{AS} = \lambda \vec{AC} = \lambda (\vec{AB} + \vec{AD}) = \lambda \vec{AB} + \lambda \vec{AD}$$

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$$= \frac{1}{n} \vec{AB} + \mu \vec{TA} + \mu \vec{AD} = \frac{1}{n} \vec{AB} + \mu \cdot \frac{-1}{n} \vec{AB} + \mu \vec{AD} =$$

$$= \frac{1-\mu}{n} \vec{AB} + \mu \vec{AD}$$

$$|AS| : |CS| = ?$$



$$|AT| = \frac{1}{n}|AB| \rightsquigarrow \vec{AT} = \frac{1}{n}\vec{AB}$$

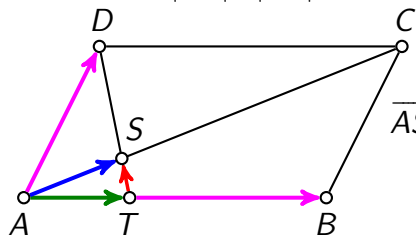
Odabrana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

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$$\vec{AS} = \lambda \vec{AB} + \lambda \vec{AD}$$

$$\vec{AS} = \frac{1-\mu}{n} \vec{AB} + \mu \vec{AD}$$

$$|AS| : |CS| = ?$$



$$\lambda =$$

$$|AT| = \frac{1}{n}|AB| \rightsquigarrow \vec{AT} = \frac{1}{n}\vec{AB}$$

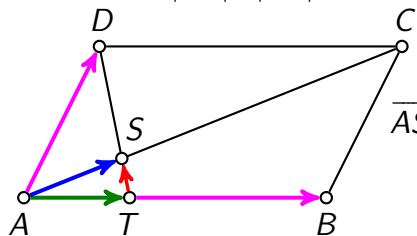
Odabrana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{AS} = \lambda \vec{AC}, \lambda \in \mathbb{R} \quad \vec{TS} = \mu \vec{TD}, \mu \in \mathbb{R}$$

$$\vec{AS} = \lambda \vec{AB} + \lambda \vec{AD}$$

$$\vec{AS} = \frac{1-\mu}{n} \vec{AB} + \mu \vec{AD}$$

$$|AS| : |CS| = ?$$



$$\lambda = \frac{1-\mu}{n}$$

$$|AT| = \frac{1}{n}|AB| \rightsquigarrow \vec{AT} = \frac{1}{n}\vec{AB}$$

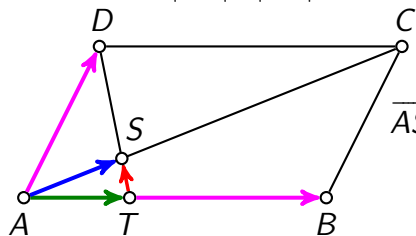
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$$\vec{AS} = \frac{1-\mu}{n} \vec{AB} + \mu \vec{AD}$$

$$|AS| : |CS| = ?$$



$$\lambda = \frac{1-\mu}{n}$$

$$\lambda =$$

$$|AT| = \frac{1}{n}|AB| \rightsquigarrow \vec{AT} = \frac{1}{n}\vec{AB}$$

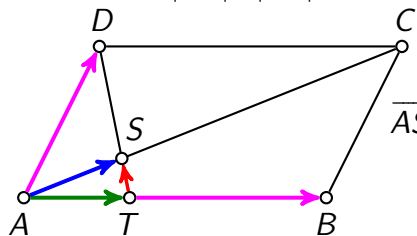
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$$\vec{AS} = \frac{1-\mu}{n} \vec{AB} + \mu \vec{AD}$$

$$|AS| : |CS| = ?$$



$$\lambda = \frac{1-\mu}{n}$$

$$\lambda = \mu$$

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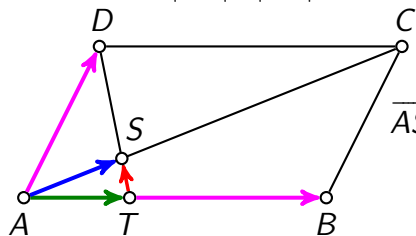
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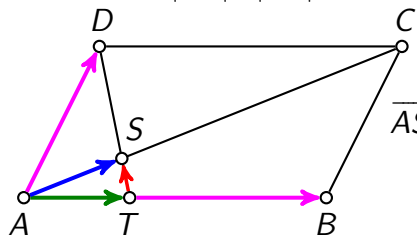
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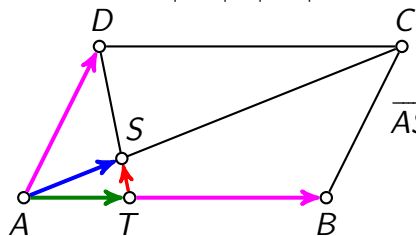
$$\vec{AS} = \frac{1-\mu}{n} \vec{AB} + \mu \vec{AD}$$

$$\lambda = \frac{1-\mu}{n}$$

$$\lambda = \mu$$

$$\lambda =$$

$$|AS| : |CS| = ?$$



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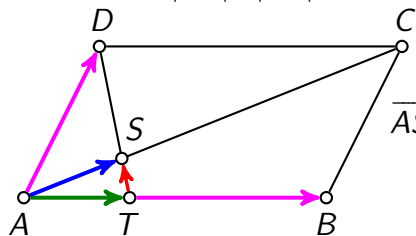
$$\vec{AS} = \frac{1-\mu}{n} \vec{AB} + \mu \vec{AD}$$

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$$\lambda = \mu$$

$$\lambda = \frac{1-\lambda}{n}$$

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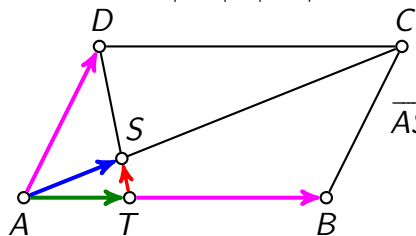
$$\vec{AS} = \frac{1-\mu}{n} \vec{AB} + \mu \vec{AD}$$

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$$\lambda = \mu$$

$$\lambda = \frac{1-\lambda}{n} \cdot n$$

$$|AS| : |CS| = ?$$



$$|AT| = \frac{1}{n}|AB| \rightsquigarrow \vec{AT} = \frac{1}{n}\vec{AB}$$

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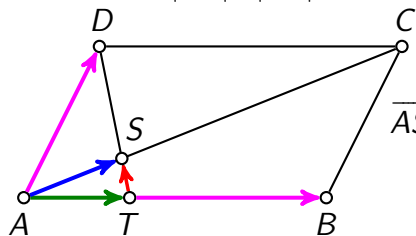
$$\lambda = \frac{1-\mu}{n}$$

$$\lambda = \mu$$

$$\lambda = \frac{1-\lambda}{n} \cdot n$$

$$n\lambda =$$

$$|AS| : |CS| = ?$$



$$\lambda = \frac{1-\mu}{n}$$

$$\lambda = \mu$$

$$\lambda = \frac{1-\lambda}{n} \cdot n$$

$$n\lambda = 1 - \lambda$$

$$|AT| = \frac{1}{n}|AB| \rightsquigarrow \vec{AT} = \frac{1}{n}\vec{AB}$$

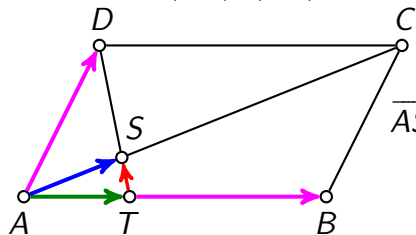
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$$|AS| : |CS| = ?$$



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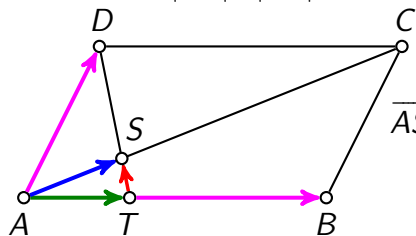
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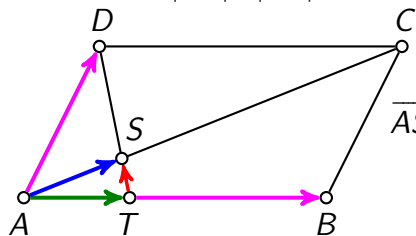
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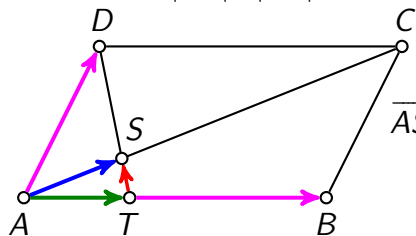
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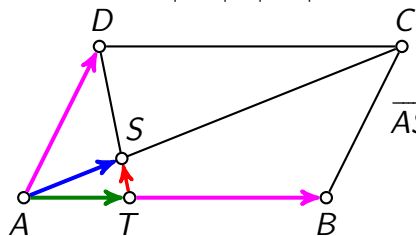
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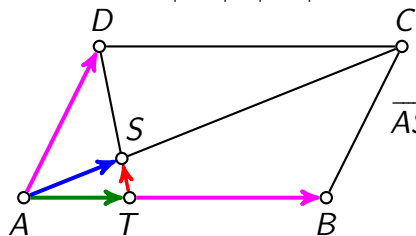
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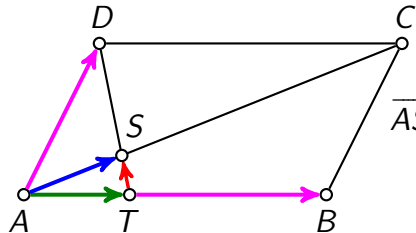
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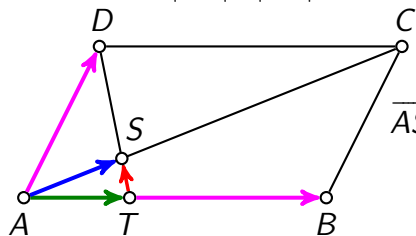
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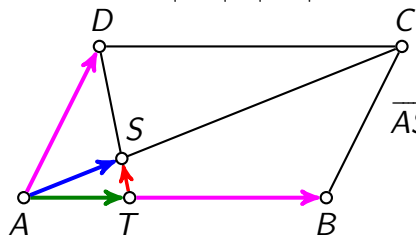
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$$\vec{AS} = -\frac{1}{n} \vec{CS}$$

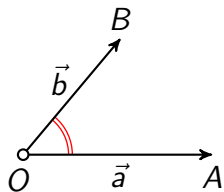
čtvrti zadatak

Skalarni produkt vektora

- $\vec{a}\vec{b} = |\vec{a}| \cdot |\vec{b}| \cdot \cos(\vec{a}, \vec{b}), \quad \vec{a}, \vec{b} \neq \vec{0}$

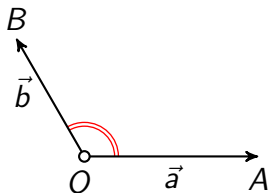
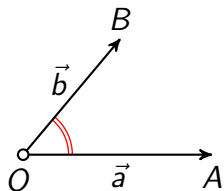
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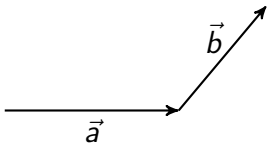
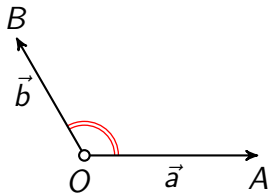
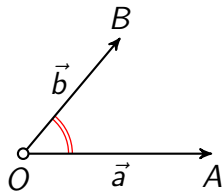
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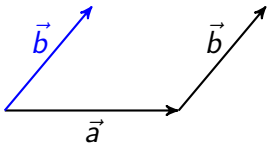
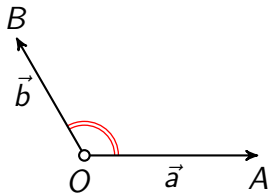
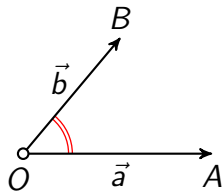
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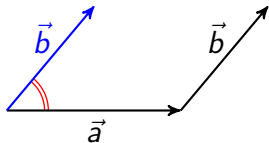
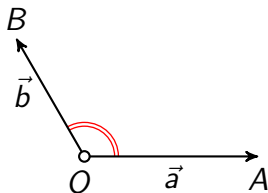
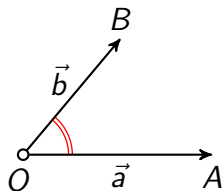
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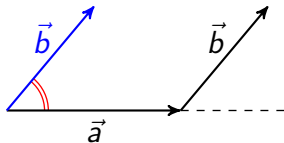
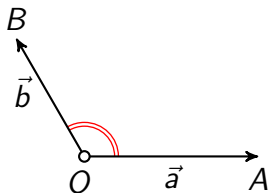
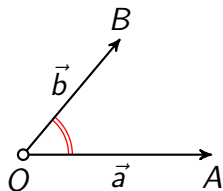
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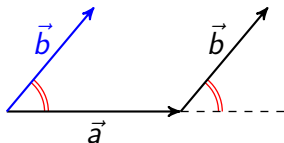
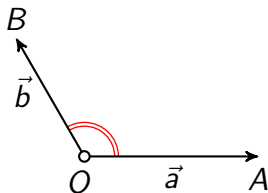
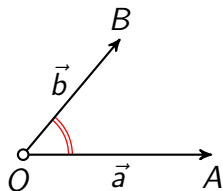
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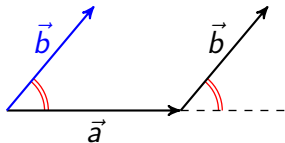
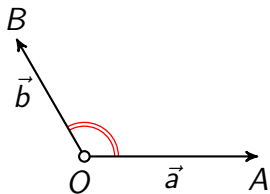
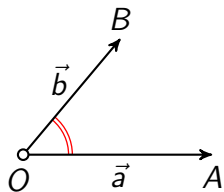
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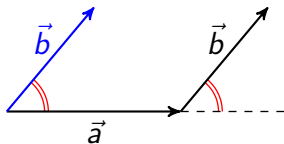
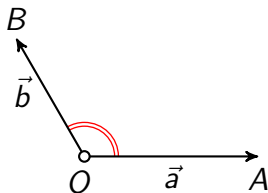
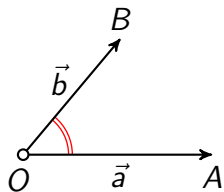
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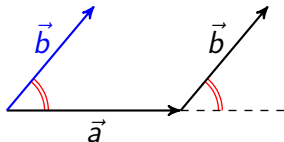
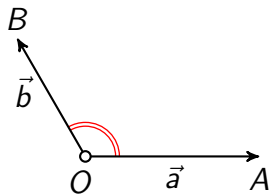
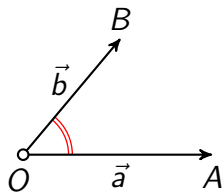
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- $(\vec{a} \pm \vec{b})^2 = \vec{a}^2 \pm 2\vec{a}\vec{b} + \vec{b}^2$



Skalarni produkt vektora

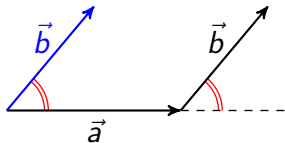
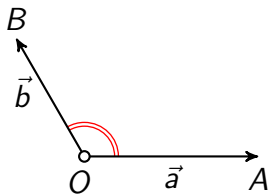
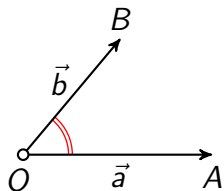
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- $\vec{a} \perp \vec{b} \Leftrightarrow \vec{a}\vec{b} = 0$



$$|\vec{a}|^2 = \vec{a}^2$$

$$|\vec{a}|^2 = \vec{a}^2 / \sqrt{\quad}$$

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$$\sqrt{|\vec{a}|^2} = \sqrt{\vec{a}^2}$$

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$$|\vec{a}|$$

OPREZ

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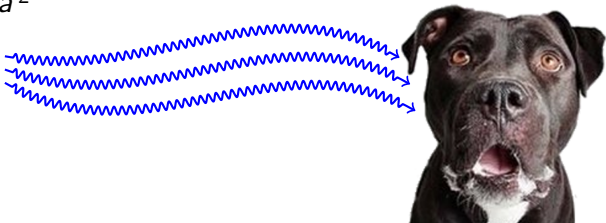


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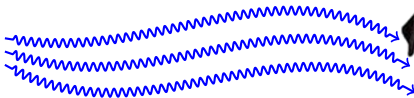


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Grrrrr!!!

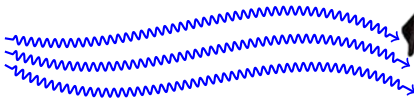


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Grrrrr!!!



Opusti se!
Sad ćemo popraviti.

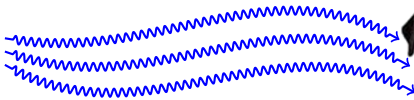


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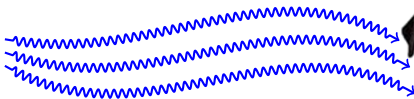


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Grrrrr!!!



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$|\vec{a}|$

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Opusti se!
Sad ćemo popraviti.

Grrrrr!!!



Zadatak 4

Zadani su okomiti vektori $\vec{a} = \vec{m} + 2\vec{n}$ i $\vec{b} = 5\vec{m} - 4\vec{n}$ pri čemu su \vec{m} i \vec{n} jedinični vektori.

- Izračunajte kut između vektora \vec{m} i \vec{n} .
- Odredite duljinu vektora $\vec{a} + \vec{b}$.

Rješenje

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

Rješenje

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

a) $\sphericalangle(\vec{m}, \vec{n}) = ?$

Rješenje

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

a) $\sphericalangle(\vec{m}, \vec{n}) = ?$

$$\cos(\vec{m}, \vec{n}) =$$

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$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

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a) $\sphericalangle(\vec{m}, \vec{n}) = ?$

$$\cos(\vec{m}, \vec{n}) = \frac{\vec{m} \cdot \vec{n}}{|\vec{m}| |\vec{n}|}$$

Rješenje

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

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$$\cos(\vec{m}, \vec{n}) = \frac{\vec{m} \cdot \vec{n}}{|\vec{m}| \cdot |\vec{n}|}$$


$$\vec{a} \cdot \vec{b} = 0$$


Rješenje

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

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$$\vec{a} \cdot \vec{b} = 0$$


$$(\vec{m} + 2\vec{n})$$

Rješenje

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

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$$(\vec{m} + 2\vec{n}) \cdot$$

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$$\vec{a} \cdot \vec{b} = 0$$

$$(\vec{m} + 2\vec{n}) \cdot (5\vec{m} - 4\vec{n})$$

Rješenje

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

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$$(\vec{m} + 2\vec{n}) \cdot (5\vec{m} - 4\vec{n}) = 0$$

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$$\cos(\vec{m}, \vec{n}) = \frac{\vec{m} \cdot \vec{n}}{|\vec{m}| \cdot |\vec{n}|}$$

$$\vec{a} \cdot \vec{b} = 0$$

$$(\vec{m} + 2\vec{n}) \cdot (5\vec{m} - 4\vec{n}) = 0$$

$$5\vec{m}^2$$

Rješenje

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

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$$\vec{a} \cdot \vec{b} = 0$$

$$(\vec{m} + 2\vec{n}) \cdot (5\vec{m} - 4\vec{n}) = 0$$

$$5\vec{m}^2 - 4\vec{m}\vec{n}$$

Rješenje

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

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$$\cos(\vec{m}, \vec{n}) = \frac{\vec{m} \cdot \vec{n}}{|\vec{m}| \cdot |\vec{n}|}$$

$$\vec{a} \cdot \vec{b} = 0$$

$$(\vec{m} + 2\vec{n}) \cdot (5\vec{m} - 4\vec{n}) = 0$$

$$5\vec{m}^2 - 4\vec{m}\vec{n} + 10\vec{m}\vec{n}$$

Rješenje

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

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$$5\vec{m}^2 - 4\vec{m}\vec{n} + 10\vec{m}\vec{n} - 8\vec{n}^2$$

Rješenje

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$$5|\vec{m}|^2$$

Rješenje

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$$5|\vec{m}|^2 + 6\vec{m}\vec{n}$$

Rješenje

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

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$$5 \cdot 1^2$$

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$$5 \cdot 1^2 + 6\vec{m}\vec{n}$$

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$$5 \cdot 1^2 + 6\vec{m}\vec{n} - 8 \cdot 1^2 = 0$$

$$6\vec{m}\vec{n} - 3 = 0$$

Rješenje

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

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$$5|\vec{m}|^2 + 6\vec{m}\vec{n} - 8|\vec{n}|^2 = 0$$

$$5 \cdot 1^2 + 6\vec{m}\vec{n} - 8 \cdot 1^2 = 0$$

$$6\vec{m}\vec{n} - 3 = 0$$

$$\vec{m}\vec{n} = \frac{1}{2}$$

Rješenje

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

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$$5|\vec{m}|^2 + 6\vec{m}\vec{n} - 8|\vec{n}|^2 = 0$$

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$$\vec{m}\vec{n} = \frac{1}{2}$$

Rješenje

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$$\cos(\vec{m}, \vec{n}) =$$

$$\vec{a} \cdot \vec{b} = 0$$

$$(\vec{m} + 2\vec{n}) \cdot (5\vec{m} - 4\vec{n}) = 0$$

$$5\vec{m}^2 - 4\vec{m}\vec{n} + 10\vec{m}\vec{n} - 8\vec{n}^2 = 0$$

$$5|\vec{m}|^2 + 6\vec{m}\vec{n} - 8|\vec{n}|^2 = 0$$

$$5 \cdot 1^2 + 6\vec{m}\vec{n} - 8 \cdot 1^2 = 0$$

$$6\vec{m}\vec{n} - 3 = 0$$

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$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

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$$\cos(\vec{m}, \vec{n}) = \text{---}$$

$$\vec{a} \cdot \vec{b} = 0$$

$$(\vec{m} + 2\vec{n}) \cdot (5\vec{m} - 4\vec{n}) = 0$$

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$$6\vec{m}\vec{n} - 3 = 0$$

$$\vec{m}\vec{n} = \frac{1}{2}$$

Rješenje

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

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$$\cos(\vec{m}, \vec{n}) = \frac{\vec{m} \cdot \vec{n}}{|\vec{m}| \cdot |\vec{n}|}$$

$$\cos(\vec{m}, \vec{n}) = \frac{1}{2}$$

$$\vec{a} \cdot \vec{b} = 0$$

$$(\vec{m} + 2\vec{n}) \cdot (5\vec{m} - 4\vec{n}) = 0$$

$$5\vec{m}^2 - 4\vec{m}\vec{n} + 10\vec{m}\vec{n} - 8\vec{n}^2 = 0$$

$$5|\vec{m}|^2 + 6\vec{m}\vec{n} - 8|\vec{n}|^2 = 0$$

$$5 \cdot 1^2 + 6\vec{m}\vec{n} - 8 \cdot 1^2 = 0$$

$$6\vec{m}\vec{n} - 3 = 0$$

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Rješenje

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

a) $\sphericalangle(\vec{m}, \vec{n}) = ?$

$$\cos(\vec{m}, \vec{n}) = \frac{\vec{m} \cdot \vec{n}}{|\vec{m}| \cdot |\vec{n}|}$$

$$\cos(\vec{m}, \vec{n}) = \frac{\frac{1}{2}}{1 \cdot 1}$$

$$\vec{a} \cdot \vec{b} = 0$$

$$(\vec{m} + 2\vec{n}) \cdot (5\vec{m} - 4\vec{n}) = 0$$

$$5\vec{m}^2 - 4\vec{m}\vec{n} + 10\vec{m}\vec{n} - 8\vec{n}^2 = 0$$

$$5|\vec{m}|^2 + 6\vec{m}\vec{n} - 8|\vec{n}|^2 = 0$$

$$5 \cdot 1^2 + 6\vec{m}\vec{n} - 8 \cdot 1^2 = 0$$

$$6\vec{m}\vec{n} - 3 = 0$$

$$\vec{m}\vec{n} = \frac{1}{2}$$

Rješenje

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

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$$\cos(\vec{m}, \vec{n}) = \frac{\vec{m} \cdot \vec{n}}{|\vec{m}| \cdot |\vec{n}|}$$

$$\cos(\vec{m}, \vec{n}) = \frac{\frac{1}{2}}{1 \cdot 1}$$

$$\cos(\vec{m}, \vec{n}) = \frac{1}{2}$$

$$\vec{a} \cdot \vec{b} = 0$$

$$(\vec{m} + 2\vec{n}) \cdot (5\vec{m} - 4\vec{n}) = 0$$

$$5\vec{m}^2 - 4\vec{m}\vec{n} + 10\vec{m}\vec{n} - 8\vec{n}^2 = 0$$

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$$5 \cdot 1^2 + 6\vec{m}\vec{n} - 8 \cdot 1^2 = 0$$

$$6\vec{m}\vec{n} - 3 = 0$$

$$\vec{m}\vec{n} = \frac{1}{2}$$

Rješenje

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

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$$\cos(\vec{m}, \vec{n}) = \frac{\vec{m} \cdot \vec{n}}{|\vec{m}| \cdot |\vec{n}|}$$

$$\cos(\vec{m}, \vec{n}) = \frac{\frac{1}{2}}{1 \cdot 1}$$

$$\cos(\vec{m}, \vec{n}) = \frac{1}{2}$$

$$\sphericalangle(\vec{m}, \vec{n}) = 60^\circ$$

$$\vec{a} \cdot \vec{b} = 0$$

$$(\vec{m} + 2\vec{n}) \cdot (5\vec{m} - 4\vec{n}) = 0$$

$$5\vec{m}^2 - 4\vec{m}\vec{n} + 10\vec{m}\vec{n} - 8\vec{n}^2 = 0$$

$$5|\vec{m}|^2 + 6\vec{m}\vec{n} - 8|\vec{n}|^2 = 0$$

$$5 \cdot 1^2 + 6\vec{m}\vec{n} - 8 \cdot 1^2 = 0$$

$$6\vec{m}\vec{n} - 3 = 0$$

$$\vec{m}\vec{n} = \frac{1}{2}$$

Rješenje

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

a) $\sphericalangle(\vec{m}, \vec{n}) = ?$

$$\cos(\vec{m}, \vec{n}) = \frac{\vec{m} \cdot \vec{n}}{|\vec{m}| \cdot |\vec{n}|}$$

$$\cos(\vec{m}, \vec{n}) = \frac{\frac{1}{2}}{1 \cdot 1}$$

$$\cos(\vec{m}, \vec{n}) = \frac{1}{2}$$

$$\sphericalangle(\vec{m}, \vec{n}) = 60^\circ$$

$$\vec{a} \cdot \vec{b} = 0$$

$$(\vec{m} + 2\vec{n}) \cdot (5\vec{m} - 4\vec{n}) = 0$$

$$5\vec{m}^2 - 4\vec{m}\vec{n} + 10\vec{m}\vec{n} - 8\vec{n}^2 = 0$$

$$5|\vec{m}|^2 + 6\vec{m}\vec{n} - 8|\vec{n}|^2 = 0$$

$$5 \cdot 1^2 + 6\vec{m}\vec{n} - 8 \cdot 1^2 = 0$$

$$6\vec{m}\vec{n} - 3 = 0$$

$$\vec{m}\vec{n} = \frac{1}{2}$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} =$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n})$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) +$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n})$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n}) = 6\vec{m} - 2\vec{n}$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n}) = 6\vec{m} - 2\vec{n}$$

$$|\vec{a} + \vec{b}|^2 =$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n}) = 6\vec{m} - 2\vec{n}$$

$$|\vec{a} + \vec{b}|^2 = (6\vec{m} - 2\vec{n})^2$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n}) = 6\vec{m} - 2\vec{n}$$

$$|\vec{a} + \vec{b}|^2 = (\vec{a} + \vec{b})^2 = (6\vec{m} - 2\vec{n})^2$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n}) = 6\vec{m} - 2\vec{n}$$

$$\begin{aligned} |\vec{a} + \vec{b}|^2 &= (\vec{a} + \vec{b})^2 = (6\vec{m} - 2\vec{n})^2 = \\ &= 36\vec{m}^2 \end{aligned}$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n}) = 6\vec{m} - 2\vec{n}$$

$$\begin{aligned} |\vec{a} + \vec{b}|^2 &= (\vec{a} + \vec{b})^2 = (6\vec{m} - 2\vec{n})^2 = \\ &= 36\vec{m}^2 - 24\vec{m}\vec{n} \end{aligned}$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n}) = 6\vec{m} - 2\vec{n}$$

$$\begin{aligned} |\vec{a} + \vec{b}|^2 &= (\vec{a} + \vec{b})^2 = (6\vec{m} - 2\vec{n})^2 = \\ &= 36\vec{m}^2 - 24\vec{m}\vec{n} + 4\vec{n}^2 \end{aligned}$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n}) = 6\vec{m} - 2\vec{n}$$

$$\begin{aligned} |\vec{a} + \vec{b}|^2 &= (\vec{a} + \vec{b})^2 = (6\vec{m} - 2\vec{n})^2 = \\ &= 36\vec{m}^2 - 24\vec{m}\vec{n} + 4\vec{n}^2 = \\ &= 36|\vec{m}|^2 \end{aligned}$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n}) = 6\vec{m} - 2\vec{n}$$

$$\begin{aligned} |\vec{a} + \vec{b}|^2 &= (\vec{a} + \vec{b})^2 = (6\vec{m} - 2\vec{n})^2 = \\ &= 36\vec{m}^2 - 24\vec{m}\vec{n} + 4\vec{n}^2 = \\ &= 36|\vec{m}|^2 - 24\vec{m}\vec{n} \end{aligned}$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n}) = 6\vec{m} - 2\vec{n}$$

$$\begin{aligned} |\vec{a} + \vec{b}|^2 &= (\vec{a} + \vec{b})^2 = (6\vec{m} - 2\vec{n})^2 = \\ &= 36\vec{m}^2 - 24\vec{m}\vec{n} + 4\vec{n}^2 = \\ &= 36|\vec{m}|^2 - 24\vec{m}\vec{n} + 4|\vec{n}|^2 \end{aligned}$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n}) = 6\vec{m} - 2\vec{n}$$

$$\begin{aligned} |\vec{a} + \vec{b}|^2 &= (\vec{a} + \vec{b})^2 = (6\vec{m} - 2\vec{n})^2 = \\ &= 36\vec{m}^2 - 24\vec{m}\vec{n} + 4\vec{n}^2 = \\ &= 36|\vec{m}|^2 - 24\vec{m}\vec{n} + 4|\vec{n}|^2 = \\ &= 36 \cdot 1^2 \end{aligned}$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n}) = 6\vec{m} - 2\vec{n}$$

$$\begin{aligned} |\vec{a} + \vec{b}|^2 &= (\vec{a} + \vec{b})^2 = (6\vec{m} - 2\vec{n})^2 = \\ &= 36\vec{m}^2 - 24\vec{m}\vec{n} + 4\vec{n}^2 = \\ &= 36|\vec{m}|^2 - 24\vec{m}\vec{n} + 4|\vec{n}|^2 = \\ &= 36 \cdot 1^2 - 24 \cdot \end{aligned}$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n}) = 6\vec{m} - 2\vec{n}$$

$$\begin{aligned} |\vec{a} + \vec{b}|^2 &= (\vec{a} + \vec{b})^2 = (6\vec{m} - 2\vec{n})^2 = \\ &= 36\vec{m}^2 - 24\vec{m}\vec{n} + 4\vec{n}^2 = \\ &= 36|\vec{m}|^2 - 24\vec{m}\vec{n} + 4|\vec{n}|^2 = \\ &= 36 \cdot 1^2 - 24 \cdot \end{aligned}$$

$$\vec{m}\vec{n} = \frac{1}{2}$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n}) = 6\vec{m} - 2\vec{n}$$

$$\begin{aligned} |\vec{a} + \vec{b}|^2 &= (\vec{a} + \vec{b})^2 = (6\vec{m} - 2\vec{n})^2 = \\ &= 36\vec{m}^2 - 24\vec{m}\vec{n} + 4\vec{n}^2 = \\ &= 36|\vec{m}|^2 - 24\vec{m}\vec{n} + 4|\vec{n}|^2 = \\ &= 36 \cdot 1^2 - 24 \cdot \frac{1}{2} \end{aligned}$$

$$\vec{m}\vec{n} = \frac{1}{2}$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n}) = 6\vec{m} - 2\vec{n}$$

$$|\vec{a} + \vec{b}|^2 = (\vec{a} + \vec{b})^2 = (6\vec{m} - 2\vec{n})^2 =$$

$$= 36\vec{m}^2 - 24\vec{m}\vec{n} + 4\vec{n}^2 =$$

$$= 36|\vec{m}|^2 - 24\vec{m}\vec{n} + 4|\vec{n}|^2 =$$

$$= 36 \cdot 1^2 - 24 \cdot \frac{1}{2} + 4 \cdot 1^2$$

$$\vec{m}\vec{n} = \frac{1}{2}$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n}) = 6\vec{m} - 2\vec{n}$$

$$|\vec{a} + \vec{b}|^2 = (\vec{a} + \vec{b})^2 = (6\vec{m} - 2\vec{n})^2 =$$

$$= 36\vec{m}^2 - 24\vec{m}\vec{n} + 4\vec{n}^2 =$$

$$= 36|\vec{m}|^2 - 24\vec{m}\vec{n} + 4|\vec{n}|^2 =$$

$$= 36 \cdot 1^2 - 24 \cdot \frac{1}{2} + 4 \cdot 1^2 = 28$$

$$\vec{m}\vec{n} = \frac{1}{2}$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n}) = 6\vec{m} - 2\vec{n}$$

$$|\vec{a} + \vec{b}|^2 = (\vec{a} + \vec{b})^2 = (6\vec{m} - 2\vec{n})^2 =$$

$$= 36\vec{m}^2 - 24\vec{m}\vec{n} + 4\vec{n}^2 =$$

$$= 36|\vec{m}|^2 - 24\vec{m}\vec{n} + 4|\vec{n}|^2 =$$

$$= 36 \cdot 1^2 - 24 \cdot \frac{1}{2} + 4 \cdot 1^2 = 28$$

$$\vec{m}\vec{n} = \frac{1}{2}$$

$$|\vec{a} + \vec{b}|^2 = 28$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n}) = 6\vec{m} - 2\vec{n}$$

$$|\vec{a} + \vec{b}|^2 = (\vec{a} + \vec{b})^2 = (6\vec{m} - 2\vec{n})^2 =$$

$$= 36\vec{m}^2 - 24\vec{m}\vec{n} + 4\vec{n}^2 =$$

$$= 36|\vec{m}|^2 - 24\vec{m}\vec{n} + 4|\vec{n}|^2 =$$

$$= 36 \cdot 1^2 - 24 \cdot \frac{1}{2} + 4 \cdot 1^2 = 28$$

$$\vec{m}\vec{n} = \frac{1}{2}$$

$$|\vec{a} + \vec{b}|^2 = 28 \rightsquigarrow |\vec{a} + \vec{b}| = \sqrt{28}$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n}) = 6\vec{m} - 2\vec{n}$$

$$|\vec{a} + \vec{b}|^2 = (\vec{a} + \vec{b})^2 = (6\vec{m} - 2\vec{n})^2 =$$

$$= 36\vec{m}^2 - 24\vec{m}\vec{n} + 4\vec{n}^2 =$$

$$= 36|\vec{m}|^2 - 24\vec{m}\vec{n} + 4|\vec{n}|^2 =$$

$$= 36 \cdot 1^2 - 24 \cdot \frac{1}{2} + 4 \cdot 1^2 = 28$$

$$\vec{m}\vec{n} = \frac{1}{2}$$

$$|\vec{a} + \vec{b}|^2 = 28 \rightsquigarrow |\vec{a} + \vec{b}| = \sqrt{28} \rightsquigarrow |\vec{a} + \vec{b}| = 2\sqrt{7}$$

$$\vec{a} = \vec{m} + 2\vec{n}, \quad \vec{b} = 5\vec{m} - 4\vec{n}, \quad |\vec{m}| = 1, \quad |\vec{n}| = 1, \quad \vec{a} \perp \vec{b}$$

$$\text{b) } |\vec{a} + \vec{b}| = ?$$

$$\vec{a} + \vec{b} = (\vec{m} + 2\vec{n}) + (5\vec{m} - 4\vec{n}) = 6\vec{m} - 2\vec{n}$$

$$|\vec{a} + \vec{b}|^2 = (\vec{a} + \vec{b})^2 = (6\vec{m} - 2\vec{n})^2 =$$

$$= 36\vec{m}^2 - 24\vec{m}\vec{n} + 4\vec{n}^2 =$$

$$= 36|\vec{m}|^2 - 24\vec{m}\vec{n} + 4|\vec{n}|^2 =$$

$$= 36 \cdot 1^2 - 24 \cdot \frac{1}{2} + 4 \cdot 1^2 = 28$$

$$\vec{m}\vec{n} = \frac{1}{2}$$

$$|\vec{a} + \vec{b}|^2 = 28 \rightsquigarrow |\vec{a} + \vec{b}| = \sqrt{28} \rightsquigarrow |\vec{a} + \vec{b}| = 2\sqrt{7}$$

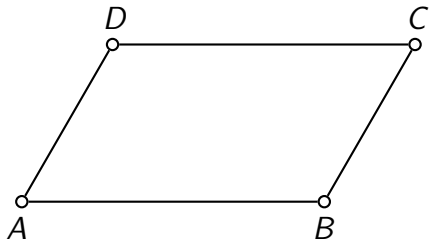
peti zadatak

Zadatak 5

Zadan je paralelogram $ABCD$ s duljinama stranica $|AB| = 5$, $|AD| = 3$ i kutom $\sphericalangle DAB = 60^\circ$. Na dijagonali \overline{AC} zadana je točka E takva da je $|AE| = \frac{4}{5}|AC|$.

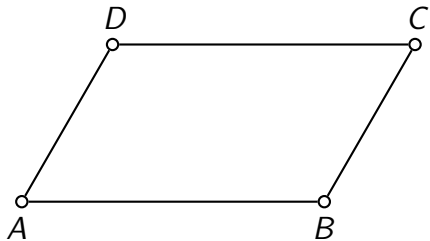
- Prikažite vektor \overrightarrow{BE} u bazi $\mathcal{B} = (\overrightarrow{AB}, \overrightarrow{AD})$. Koje su koordinate vektora \overrightarrow{BE} u bazi \mathcal{B} ?
- Izračunajte skalarni produkt vektora \overrightarrow{BE} i \overrightarrow{BA} .
- Izračunajte duljinu vektora \overrightarrow{BE} .
- Izračunajte kut $\sphericalangle ABE$.

Rješenje



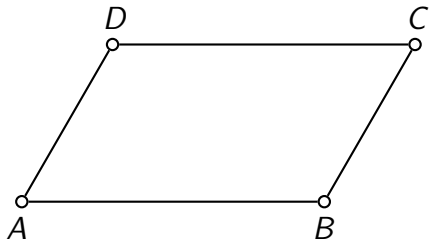
Rješenje

$$|AB| = 5, \quad |AD| = 3$$



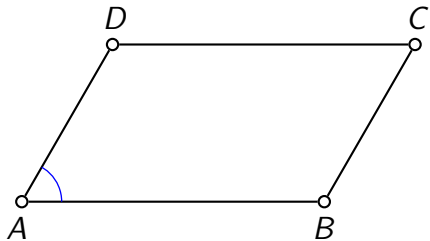
Rješenje

$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$



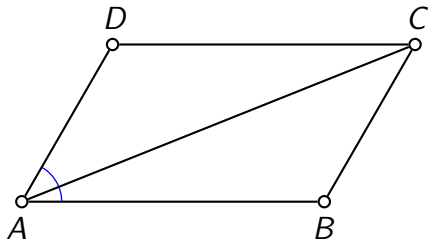
Rješenje

$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

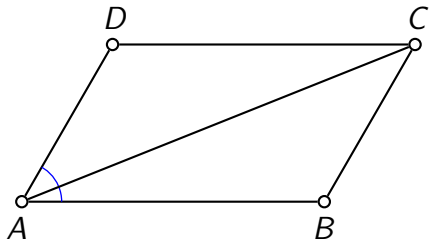


Rješenje

$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$



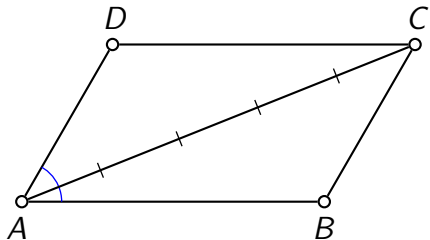
Rješenje



$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC|$$

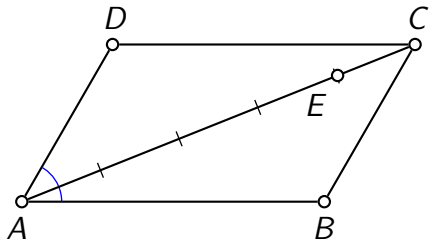
Rješenje



$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC|$$

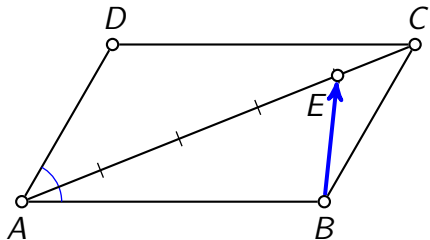
Rješenje



$$|AB| = 5, \quad |AD| = 3, \quad \angle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC|$$

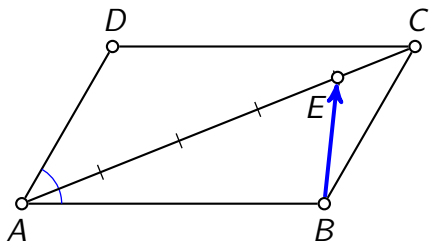
Rješenje



$$|AB| = 5, \quad |AD| = 3, \quad \angle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC|$$

Rješenje

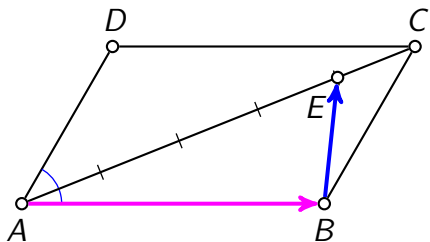


$$|AB| = 5, \quad |AD| = 3, \quad \angle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC|$$

Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

Rješenje

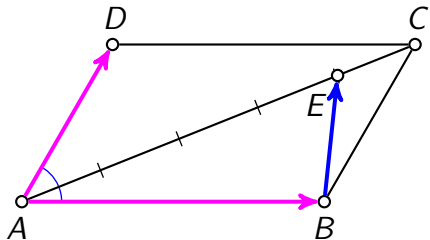


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Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

Rješenje

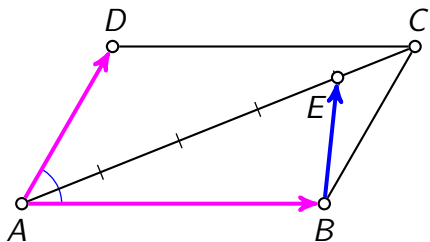


$$|AB| = 5, \quad |AD| = 3, \quad \angle DAB = 60^\circ$$

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$$\text{Zadana baza: } \mathcal{B} = (\vec{AB}, \vec{AD})$$

Rješenje



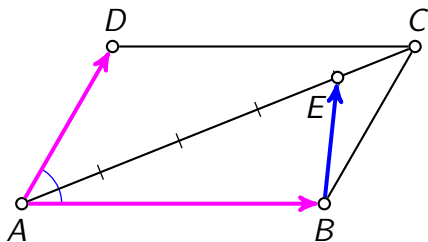
$$|AB| = 5, \quad |AD| = 3, \quad \angle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC|$$

Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

a) $\vec{BE} =$

Rješenje



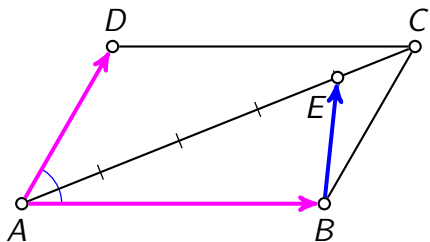
$$|AB| = 5, \quad |AD| = 3, \quad \angle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC|$$

Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

a) $\vec{BE} = \vec{BA}$

Rješenje



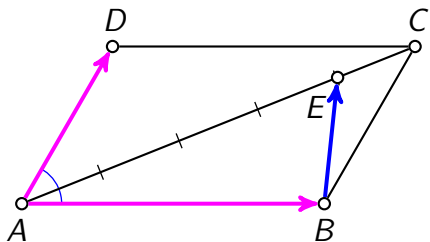
$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC|$$

Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

a) $\vec{BE} = \vec{BA} +$

Rješenje



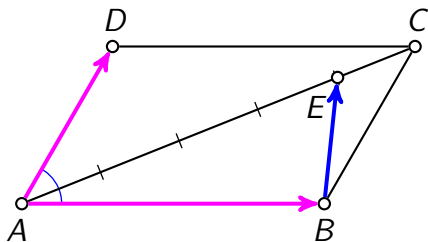
$$|AB| = 5, \quad |AD| = 3, \quad \angle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC|$$

Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

a)
$$\vec{BE} = \vec{BA} + \vec{AE}$$

Rješenje



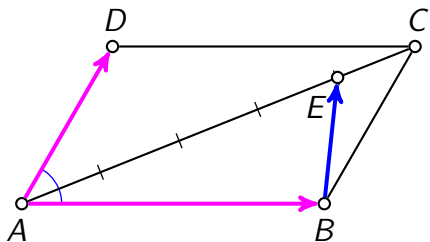
$$|AB| = 5, \quad |AD| = 3, \quad \angle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC|$$

Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

a)
$$\vec{BE} = \vec{BA} + \vec{AE} = -\vec{AB}$$

Rješenje



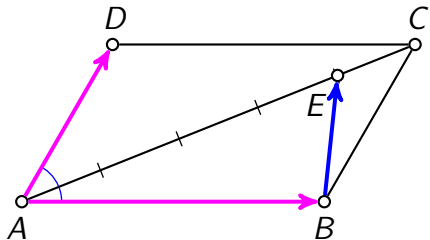
$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

$$\text{Zadana baza: } \mathcal{B} = (\vec{AB}, \vec{AD})$$

$$\text{a) } \vec{BE} = \vec{BA} + \vec{AE} = -\vec{AB} +$$

Rješenje



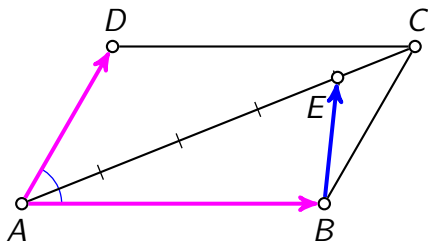
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$$\text{Zadana baza: } \mathcal{B} = (\vec{AB}, \vec{AD})$$

$$\text{a) } \vec{BE} = \vec{BA} + \vec{AE} = -\vec{AB} + \frac{4}{5}\vec{AC}$$

Rješenje



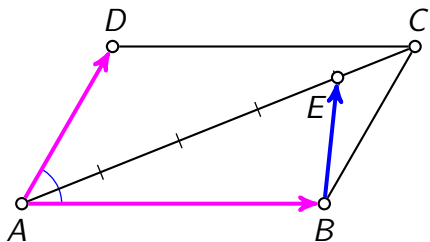
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$$\text{Zadana baza: } \mathcal{B} = (\vec{AB}, \vec{AD})$$

$$\text{a) } \vec{BE} = \vec{BA} + \vec{AE} = -\vec{AB} + \frac{4}{5}\vec{AC} = -\vec{AB}$$

Rješenje



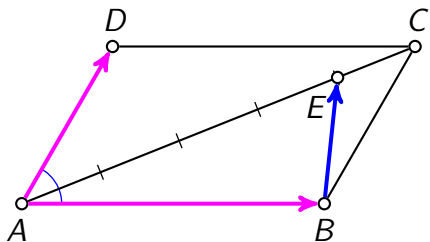
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$$\text{Zadana baza: } \mathcal{B} = (\vec{AB}, \vec{AD})$$

$$\text{a) } \vec{BE} = \vec{BA} + \vec{AE} = -\vec{AB} + \frac{4}{5}\vec{AC} = -\vec{AB} + \frac{4}{5} \left($$

Rješenje



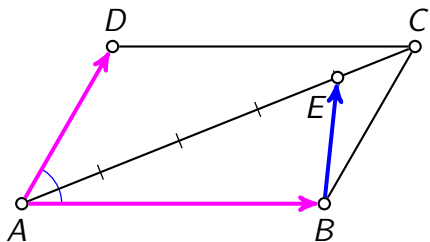
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$$\text{Zadana baza: } \mathcal{B} = (\vec{AB}, \vec{AD})$$

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Rješenje



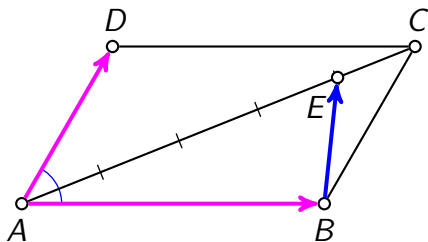
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Rješenje



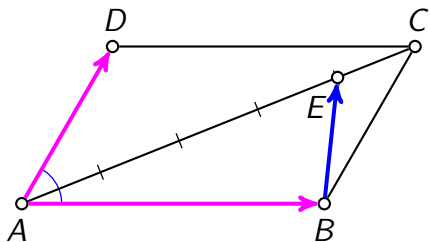
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Rješenje



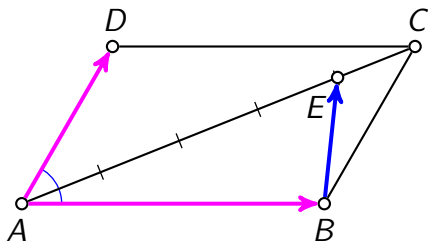
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Rješenje



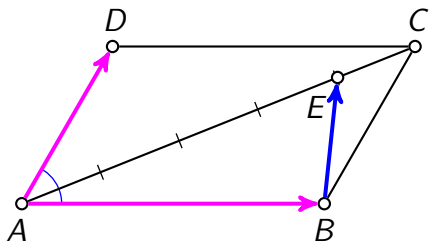
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Rješenje



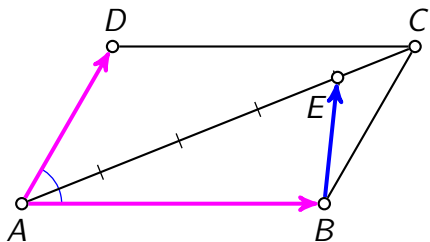
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Rješenje



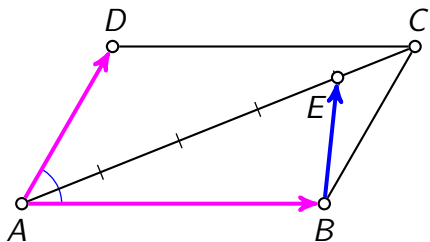
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Rješenje



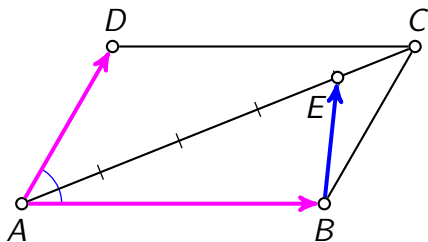
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Rješenje



$$|AB| = 5, \quad |AD| = 3, \quad \angle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

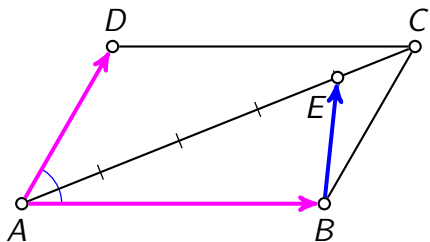
$$\text{Zadana baza: } \mathcal{B} = (\vec{AB}, \vec{AD})$$

$$\text{a) } \vec{BE} = \vec{BA} + \vec{AE} = -\vec{AB} + \frac{4}{5}\vec{AC} = -\vec{AB} + \frac{4}{5}(\vec{AB} + \vec{AD}) =$$

$$= -\vec{AB} + \frac{4}{5}\vec{AB} + \frac{4}{5}\vec{AD} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

Rješenje



$$|AB| = 5, \quad |AD| = 3, \quad \angle DAB = 60^\circ$$

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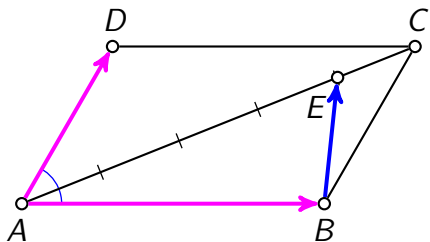
$$\text{Zadana baza: } B = (\vec{AB}, \vec{AD})$$

$$\text{a) } \vec{BE} = \vec{BA} + \vec{AE} = -\vec{AB} + \frac{4}{5}\vec{AC} = -\vec{AB} + \frac{4}{5}(\vec{AB} + \vec{AD}) =$$

$$= -\vec{AB} + \frac{4}{5}\vec{AB} + \frac{4}{5}\vec{AD} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \rightsquigarrow \vec{BE} = \left(-\frac{1}{5}, \frac{4}{5}\right)$$

Rješenje



$$|AB| = 5, \quad |AD| = 3, \quad \angle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

$$\text{Zadana baza: } B = (\vec{AB}, \vec{AD})$$

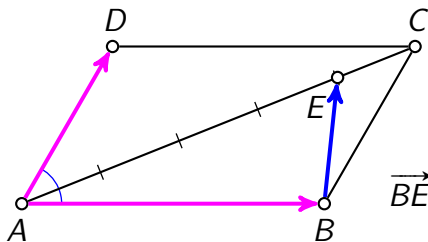
$$\text{a) } \vec{BE} = \vec{BA} + \vec{AE} = -\vec{AB} + \frac{4}{5}\vec{AC} = -\vec{AB} + \frac{4}{5}(\vec{AB} + \vec{AD}) =$$

$$= -\vec{AB} + \frac{4}{5}\vec{AB} + \frac{4}{5}\vec{AD} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \rightsquigarrow \vec{BE} = \left(-\frac{1}{5}, \frac{4}{5}\right)$$

koordinata vektora \vec{BE} u bazi B

Rješenje



$$|AB| = 5, \quad |AD| = 3, \quad \angle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $B = (\vec{AB}, \vec{AD})$

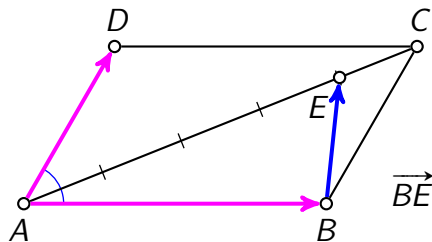
$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

$$\text{a) } \vec{BE} = \vec{BA} + \vec{AE} = -\vec{AB} + \frac{4}{5}\vec{AC} = -\vec{AB} + \frac{4}{5}(\vec{AB} + \vec{AD}) =$$

$$= -\vec{AB} + \frac{4}{5}\vec{AB} + \frac{4}{5}\vec{AD} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \rightsquigarrow \vec{BE} = \left(-\frac{1}{5}, \frac{4}{5}\right)$$

koordinate vektora \vec{BE} u bazi B



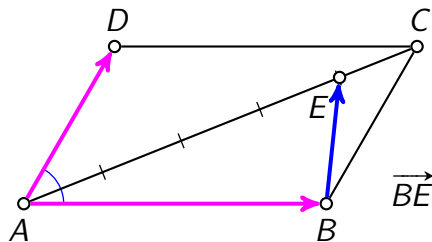
$$|AB| = 5, \quad |AD| = 3, \quad \angle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)



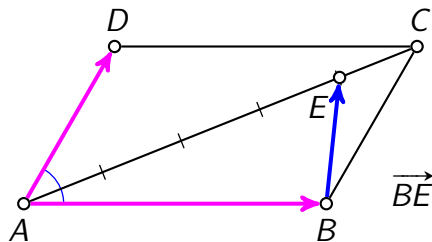
$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b) $\vec{BE} \cdot \vec{BA} =$



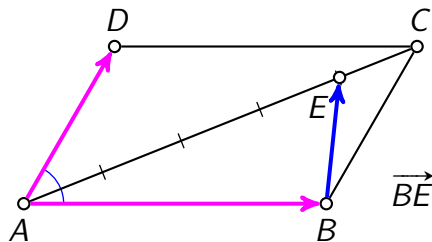
$$|AB| = 5, \quad |AD| = 3, \quad \angle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)
$$\vec{BE} \cdot \vec{BA} = \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot \vec{BA}$$



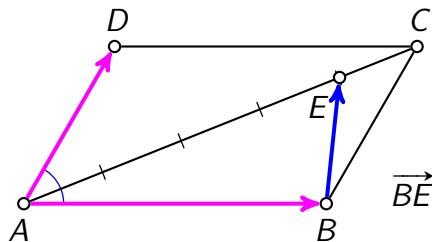
$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)
$$\vec{BE} \cdot \vec{BA} = \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot \vec{BA}$$



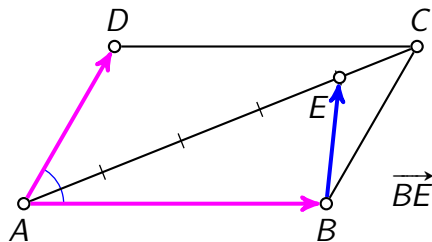
$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)
$$\vec{BE} \cdot \vec{BA} = \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot (-\vec{AB})$$



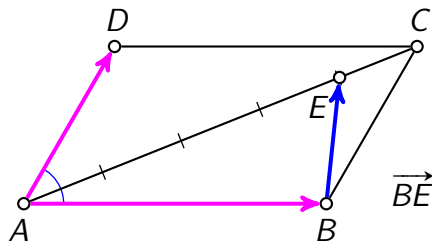
$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

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Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)
$$\vec{BE} \cdot \vec{BA} = \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot (-\vec{AB}) = \frac{1}{5}\vec{AB}^2$$



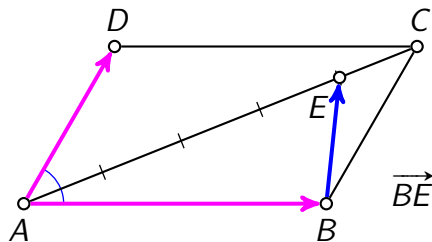
$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)
$$\vec{BE} \cdot \vec{BA} = \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot (-\vec{AB}) = \frac{1}{5}\vec{AB}^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD}$$



$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

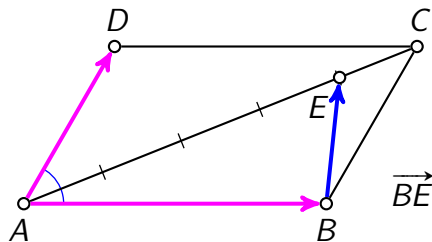
$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $B = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)

$$\begin{aligned} \vec{BE} \cdot \vec{BA} &= \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot (-\vec{AB}) = \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \\ &= \frac{1}{5}|\vec{AB}|^2 \end{aligned}$$



$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

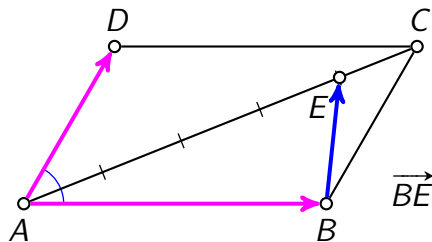
$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)

$$\begin{aligned} \vec{BE} \cdot \vec{BA} &= \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot (-\vec{AB}) = \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \\ &= \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} \end{aligned}$$



$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

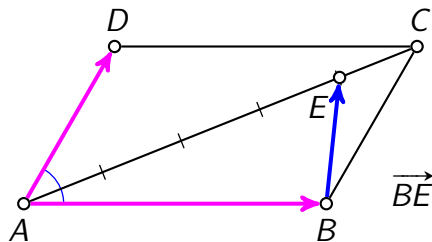
Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)

$$\begin{aligned} \vec{BE} \cdot \vec{BA} &= \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot (-\vec{AB}) = \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \\ &= \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} \end{aligned}$$

$$\vec{AB} \cdot \vec{AD} =$$



$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

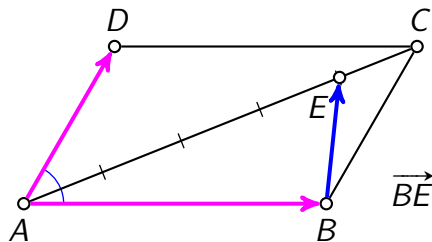
Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)

$$\begin{aligned} \vec{BE} \cdot \vec{BA} &= \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot (-\vec{AB}) = \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \\ &= \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} \end{aligned}$$

$$\vec{AB} \cdot \vec{AD} = |\vec{AB}|$$



$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

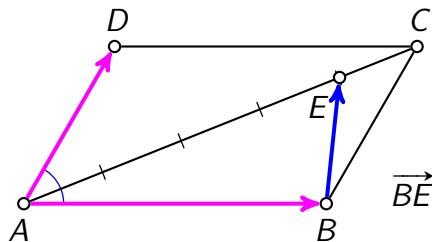
Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)

$$\begin{aligned} \vec{BE} \cdot \vec{BA} &= \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot (-\vec{AB}) = \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \\ &= \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} \end{aligned}$$

$$\vec{AB} \cdot \vec{AD} = |\vec{AB}| \cdot |\vec{AD}|$$



$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

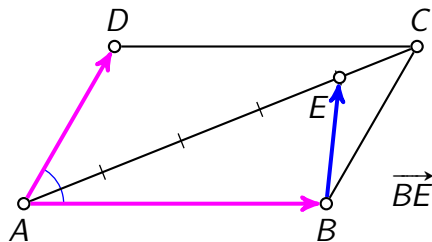
Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)

$$\begin{aligned} \vec{BE} \cdot \vec{BA} &= \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot (-\vec{AB}) = \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \\ &= \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} \end{aligned}$$

$$\vec{AB} \cdot \vec{AD} = |\vec{AB}| \cdot |\vec{AD}| \cdot \cos(\vec{AB}, \vec{AD})$$



$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

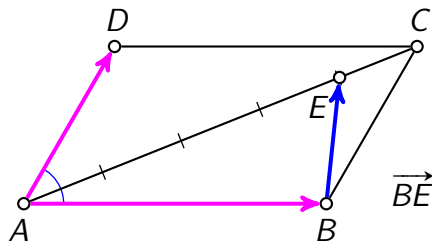
Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)

$$\begin{aligned} \vec{BE} \cdot \vec{BA} &= \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot (-\vec{AB}) = \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \\ &= \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} \end{aligned}$$

$$\vec{AB} \cdot \vec{AD} = |\vec{AB}| \cdot |\vec{AD}| \cdot \cos(\vec{AB}, \vec{AD}) = 5$$



$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

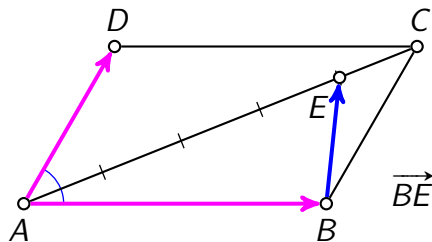
Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)

$$\begin{aligned} \vec{BE} \cdot \vec{BA} &= \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot (-\vec{AB}) = \frac{1}{5}\vec{AB}^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \\ &= \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} \end{aligned}$$

$$\vec{AB} \cdot \vec{AD} = |\vec{AB}| \cdot |\vec{AD}| \cdot \cos(\vec{AB}, \vec{AD}) = 5 \cdot 3$$



$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

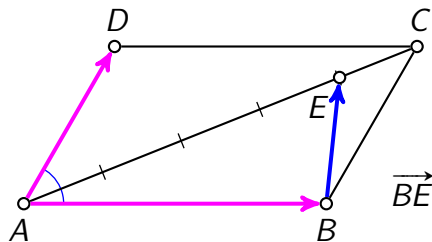
Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)

$$\begin{aligned} \vec{BE} \cdot \vec{BA} &= \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot (-\vec{AB}) = \frac{1}{5}\vec{AB}^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \\ &= \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} \end{aligned}$$

$$\vec{AB} \cdot \vec{AD} = |\vec{AB}| \cdot |\vec{AD}| \cdot \cos(\vec{AB}, \vec{AD}) = 5 \cdot 3 \cdot \cos 60^\circ$$



$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

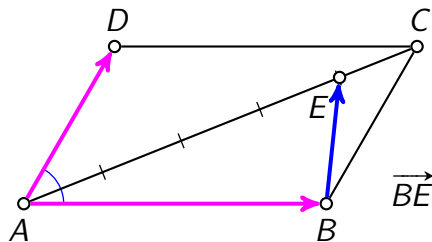
Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)

$$\begin{aligned} \vec{BE} \cdot \vec{BA} &= \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot (-\vec{AB}) = \frac{1}{5}\vec{AB}^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \\ &= \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} \end{aligned}$$

$$\vec{AB} \cdot \vec{AD} = |\vec{AB}| \cdot |\vec{AD}| \cdot \cos(\vec{AB}, \vec{AD}) = 5 \cdot 3 \cdot \cos 60^\circ = \frac{15}{2}$$



$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

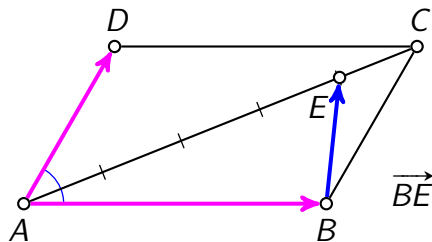
Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)

$$\begin{aligned} \vec{BE} \cdot \vec{BA} &= \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot (-\vec{AB}) = \frac{1}{5}\vec{AB}^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \\ &= \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \frac{1}{5}. \end{aligned}$$

$$\vec{AB} \cdot \vec{AD} = |\vec{AB}| \cdot |\vec{AD}| \cdot \cos(\vec{AB}, \vec{AD}) = 5 \cdot 3 \cdot \cos 60^\circ = \frac{15}{2}$$



$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

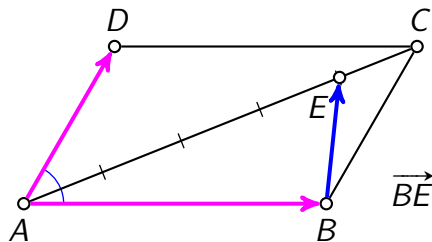
Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)

$$\begin{aligned} \vec{BE} \cdot \vec{BA} &= \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot (-\vec{AB}) = \frac{1}{5}\vec{AB}^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \\ &= \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \frac{1}{5} \cdot 5^2 \end{aligned}$$

$$\vec{AB} \cdot \vec{AD} = |\vec{AB}| \cdot |\vec{AD}| \cdot \cos(\vec{AB}, \vec{AD}) = 5 \cdot 3 \cdot \cos 60^\circ = \frac{15}{2}$$



$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

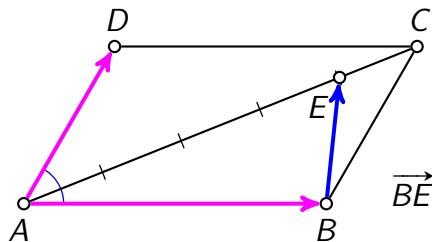
Zadana baza: $B = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)

$$\begin{aligned} \vec{BE} \cdot \vec{BA} &= \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot (-\vec{AB}) = \frac{1}{5}\vec{AB}^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \\ &= \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \frac{1}{5} \cdot 5^2 - \frac{4}{5} \cdot \end{aligned}$$

$$\vec{AB} \cdot \vec{AD} = |\vec{AB}| \cdot |\vec{AD}| \cdot \cos(\vec{AB}, \vec{AD}) = 5 \cdot 3 \cdot \cos 60^\circ = \frac{15}{2}$$



$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

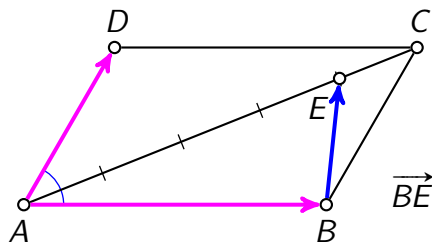
Zadana baza: $B = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)

$$\begin{aligned} \vec{BE} \cdot \vec{BA} &= \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot (-\vec{AB}) = \frac{1}{5}\vec{AB}^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \\ &= \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \frac{1}{5} \cdot 5^2 - \frac{4}{5} \cdot \frac{15}{2} \end{aligned}$$

$$\vec{AB} \cdot \vec{AD} = |\vec{AB}| \cdot |\vec{AD}| \cdot \cos(\vec{AB}, \vec{AD}) = 5 \cdot 3 \cdot \cos 60^\circ = \frac{15}{2}$$



$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

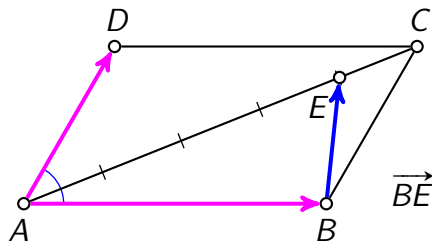
Zadana baza: $B = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}$$

b)

$$\begin{aligned} \vec{BE} \cdot \vec{BA} &= \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot (-\vec{AB}) = \frac{1}{5}\vec{AB}^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \\ &= \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \frac{1}{5} \cdot 5^2 - \frac{4}{5} \cdot \frac{15}{2} = -1 \end{aligned}$$

$$\vec{AB} \cdot \vec{AD} = |\vec{AB}| \cdot |\vec{AD}| \cdot \cos(\vec{AB}, \vec{AD}) = 5 \cdot 3 \cdot \cos 60^\circ = \frac{15}{2}$$



$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $B = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

b)

$$\begin{aligned} \vec{BE} \cdot \vec{BA} &= \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot (-\vec{AB}) = \frac{1}{5}\vec{AB}^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \\ &= \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \frac{1}{5} \cdot 5^2 - \frac{4}{5} \cdot \frac{15}{2} = -1 \end{aligned}$$

$$\vec{AB} \cdot \vec{AD} = |\vec{AB}| \cdot |\vec{AD}| \cdot \cos(\vec{AB}, \vec{AD}) = 5 \cdot 3 \cdot \cos 60^\circ = \frac{15}{2}$$

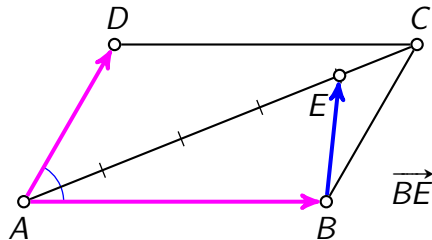
$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, \quad |AD| = 3, \quad \angle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $B = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$



$$\begin{aligned} \text{b)} \quad \vec{BE} \cdot \vec{BA} &= \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right) \cdot (-\vec{AB}) = \frac{1}{5}\vec{AB}^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \\ &= \frac{1}{5}|\vec{AB}|^2 - \frac{4}{5}\vec{AB} \cdot \vec{AD} = \frac{1}{5} \cdot 5^2 - \frac{4}{5} \cdot \frac{15}{2} = -1 \end{aligned}$$

$$\vec{AB} \cdot \vec{AD} = |\vec{AB}| \cdot |\vec{AD}| \cdot \cos(\vec{AB}, \vec{AD}) = 5 \cdot 3 \cdot \cos 60^\circ = \frac{15}{2}$$

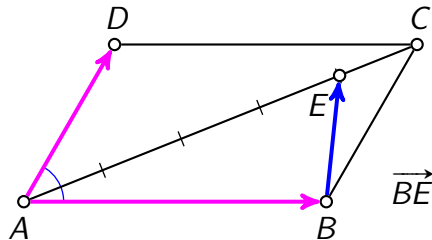
$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, \quad |AD| = 3, \quad \angle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$



c)

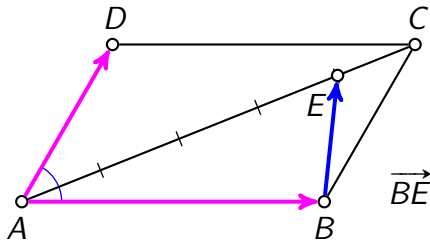
$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, \quad |AD| = 3, \quad \angle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$



c) $|\vec{BE}|^2 =$

$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

c) $|\vec{BE}|^2 = \vec{BE}^2$

$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

c) $|\vec{BE}|^2 = \vec{BE}^2 = \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right)^2$

$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, |AD| = 3, \angle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

c)

$$\begin{aligned} |\vec{BE}|^2 &= \vec{BE}^2 = \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right)^2 = \\ &= \frac{1}{25}\vec{AB}^2 \end{aligned}$$

$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, |AD| = 3, \angle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

c)

$$\begin{aligned} |\vec{BE}|^2 &= \vec{BE}^2 = \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right)^2 = \\ &= \frac{1}{25}\vec{AB}^2 - \frac{8}{25}\vec{AB} \cdot \vec{AD} \end{aligned}$$

$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, |AD| = 3, \angle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $B = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

c)

$$\begin{aligned} |\vec{BE}|^2 &= \vec{BE}^2 = \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right)^2 = \\ &= \frac{1}{25}\vec{AB}^2 - \frac{8}{25}\vec{AB} \cdot \vec{AD} + \frac{16}{25}\vec{AD}^2 \end{aligned}$$

$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, |AD| = 3, \angle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

$$\text{Zadana baza: } B = (\vec{AB}, \vec{AD})$$

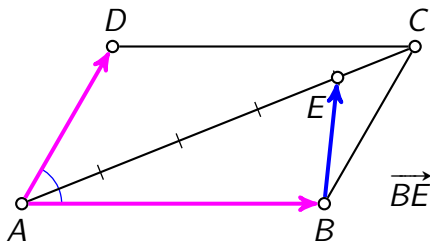
$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

c)

$$\begin{aligned} |\vec{BE}|^2 &= \vec{BE}^2 = \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right)^2 = \\ &= \frac{1}{25}\vec{AB}^2 - \frac{8}{25}\vec{AB} \cdot \vec{AD} + \frac{16}{25}\vec{AD}^2 = \\ &= \frac{1}{25}|\vec{AB}|^2 \end{aligned}$$

$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, |AD| = 3, \angle DAB = 60^\circ$$



$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

$$\text{Zadana baza: } B = (\vec{AB}, \vec{AD})$$

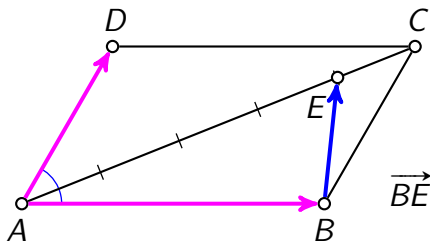
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c)

$$\begin{aligned} |\vec{BE}|^2 &= \vec{BE}^2 = \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right)^2 = \\ &= \frac{1}{25}\vec{AB}^2 - \frac{8}{25}\vec{AB} \cdot \vec{AD} + \frac{16}{25}\vec{AD}^2 = \\ &= \frac{1}{25}|\vec{AB}|^2 - \frac{8}{25}\vec{AB} \cdot \vec{AD} \end{aligned}$$

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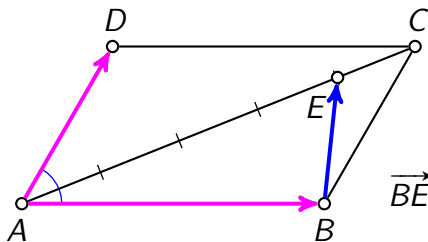
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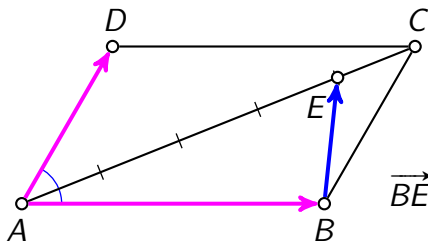
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$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, |AD| = 3, \angle DAB = 60^\circ$$



$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

$$\text{Zadana baza: } B = (\vec{AB}, \vec{AD})$$

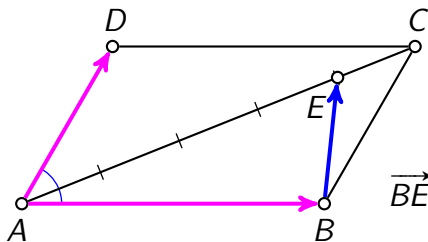
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$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$



$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

$$\text{Zadana baza: } B = (\vec{AB}, \vec{AD})$$

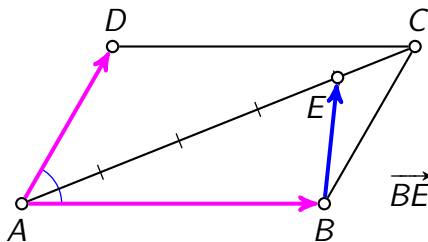
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$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, |AD| = 3, \angle DAB = 60^\circ$$



$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

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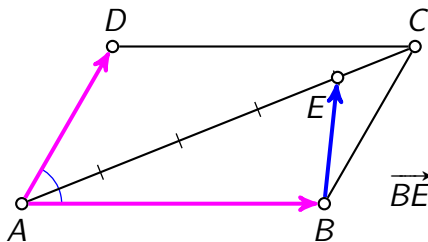
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$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$



$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

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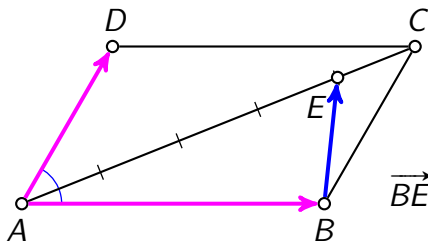
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$$\text{Zadana baza: } B = (\vec{AB}, \vec{AD})$$

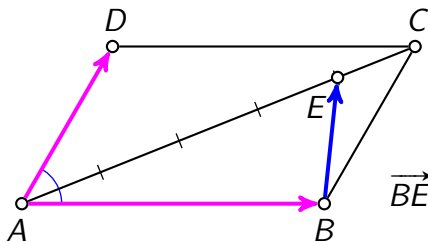
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$$\vec{BE} \cdot \vec{BA} = -1$$

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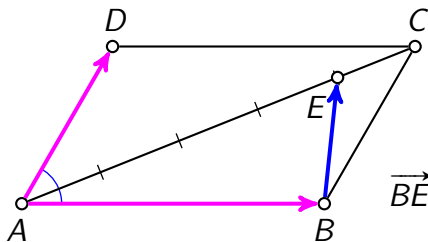
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$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$



$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

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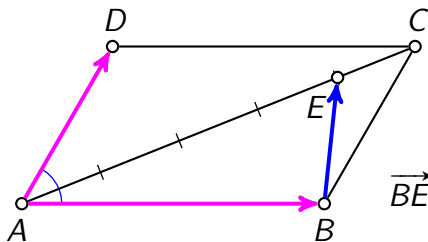
$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

$$\begin{aligned} \text{c) } |\vec{BE}|^2 &= \vec{BE}^2 = \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right)^2 = \\ &= \frac{1}{25}\vec{AB}^2 - \frac{8}{25}\vec{AB} \cdot \vec{AD} + \frac{16}{25}\vec{AD}^2 = \\ &= \frac{1}{25}|\vec{AB}|^2 - \frac{8}{25}\vec{AB} \cdot \vec{AD} + \frac{16}{25}|\vec{AD}|^2 = \\ &= \frac{1}{25} \cdot 5^2 - \frac{8}{25} \cdot \frac{15}{2} + \frac{16}{25} \cdot 3^2 = \frac{109}{25} \end{aligned}$$

$$|\vec{BE}|^2 = \frac{109}{25}$$

$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, |AD| = 3, \angle DAB = 60^\circ$$



$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

$$\text{Zadana baza: } B = (\vec{AB}, \vec{AD})$$

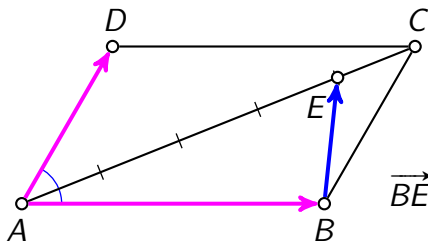
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$$\begin{aligned} \text{c) } |\vec{BE}|^2 &= \vec{BE}^2 = \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right)^2 = \\ &= \frac{1}{25}\vec{AB}^2 - \frac{8}{25}\vec{AB} \cdot \vec{AD} + \frac{16}{25}\vec{AD}^2 = \\ &= \frac{1}{25}|\vec{AB}|^2 - \frac{8}{25}\vec{AB} \cdot \vec{AD} + \frac{16}{25}|\vec{AD}|^2 = \\ &= \frac{1}{25} \cdot 5^2 - \frac{8}{25} \cdot \frac{15}{2} + \frac{16}{25} \cdot 3^2 = \frac{109}{25} \end{aligned}$$

$$|\vec{BE}|^2 = \frac{109}{25} \rightsquigarrow |\vec{BE}| = \frac{\sqrt{109}}{5}$$

$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$



$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

$$\text{Zadana baza: } B = (\vec{AB}, \vec{AD})$$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

c)

$$|\vec{BE}|^2 = \vec{BE}^2 = \left(-\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD}\right)^2 = \quad |\vec{BE}| = \frac{\sqrt{109}}{5}$$

$$= \frac{1}{25}\vec{AB}^2 - \frac{8}{25}\vec{AB} \cdot \vec{AD} + \frac{16}{25}\vec{AD}^2 =$$

$$= \frac{1}{25}|\vec{AB}|^2 - \frac{8}{25}\vec{AB} \cdot \vec{AD} + \frac{16}{25}|\vec{AD}|^2 =$$

$$= \frac{1}{25} \cdot 5^2 - \frac{8}{25} \cdot \frac{15}{2} + \frac{16}{25} \cdot 3^2 = \frac{109}{25}$$

$$|\vec{BE}|^2 = \frac{109}{25} \rightsquigarrow |\vec{BE}| = \frac{\sqrt{109}}{5}$$

$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, \quad |AD| = 3, \quad \angle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $\mathcal{B} = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

$$|\vec{BE}| = \frac{\sqrt{109}}{5}$$

d)

$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

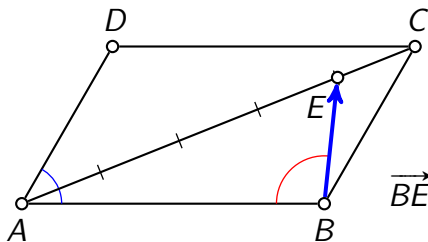
$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $B = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

$$|\vec{BE}| = \frac{\sqrt{109}}{5}$$

d) $\sphericalangle ABE = ?$



$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

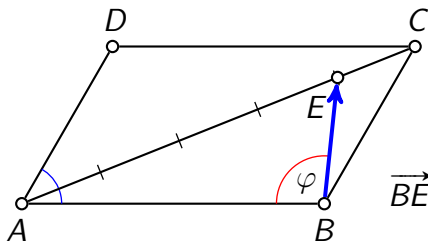
Zadana baza: $B = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

$$|\vec{BE}| = \frac{\sqrt{109}}{5}$$

d) $\sphericalangle ABE = ?$

$$\varphi = \sphericalangle ABE$$



$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $B = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

$$|\vec{BE}| = \frac{\sqrt{109}}{5}$$

d) $\sphericalangle ABE = ?$

$$\varphi = \sphericalangle ABE = \sphericalangle(\vec{BA}, \vec{BE})$$

$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $B = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

$$|\vec{BE}| = \frac{\sqrt{109}}{5}$$

d) $\sphericalangle ABE = ?$

$$\varphi = \sphericalangle ABE = \sphericalangle(\vec{BA}, \vec{BE})$$

$$\cos \varphi =$$

$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, |AD| = 3, \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $B = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

$$|\vec{BE}| = \frac{\sqrt{109}}{5}$$

d) $\sphericalangle ABE = ?$

$$\varphi = \sphericalangle ABE = \sphericalangle(\vec{BA}, \vec{BE})$$

$$\cos \varphi = \text{-----}$$

$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, |AD| = 3, \sphericalangle DAB = 60^\circ$$

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Zadana baza: $B = (\vec{AB}, \vec{AD})$

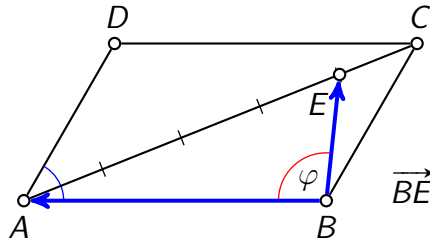
$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

$$|\vec{BE}| = \frac{\sqrt{109}}{5}$$

d) $\sphericalangle ABE = ?$

$$\varphi = \sphericalangle ABE = \sphericalangle(\vec{BA}, \vec{BE})$$

$$\cos \varphi = \frac{\vec{BA} \cdot \vec{BE}}{|\vec{BA}| |\vec{BE}|}$$



$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $B = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

$$|\vec{BE}| = \frac{\sqrt{109}}{5}$$

d) $\sphericalangle ABE = ?$

$$\varphi = \sphericalangle ABE = \sphericalangle(\vec{BA}, \vec{BE})$$

$$\cos \varphi = \frac{\vec{BA} \cdot \vec{BE}}{|\vec{BA}| \cdot |\vec{BE}|}$$

$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

$$\text{Zadana baza: } B = (\vec{AB}, \vec{AD})$$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

$$|\vec{BE}| = \frac{\sqrt{109}}{5}$$

d) $\sphericalangle ABE = ?$

$$\varphi = \sphericalangle ABE = \sphericalangle(\vec{BA}, \vec{BE})$$

$$\cos \varphi = \frac{\vec{BA} \cdot \vec{BE}}{|\vec{BA}| \cdot |\vec{BE}|} = \frac{-1}{5 \cdot \frac{\sqrt{109}}{5}} = \frac{-1}{\sqrt{109}}$$

$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $B = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

$$|\vec{BE}| = \frac{\sqrt{109}}{5}$$

d) $\sphericalangle ABE = ?$

$$\varphi = \sphericalangle ABE = \sphericalangle(\vec{BA}, \vec{BE})$$

$$\cos \varphi = \frac{\vec{BA} \cdot \vec{BE}}{|\vec{BA}| \cdot |\vec{BE}|} = \frac{-1}{\phantom{|\vec{BA}| \cdot |\vec{BE}|}}$$

$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $B = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

$$|\vec{BE}| = \frac{\sqrt{109}}{5}$$

d) $\sphericalangle ABE = ?$

$$\varphi = \sphericalangle ABE = \sphericalangle(\vec{BA}, \vec{BE})$$

$$\cos \varphi = \frac{\vec{BA} \cdot \vec{BE}}{|\vec{BA}| \cdot |\vec{BE}|} = \frac{-1}{5}$$

$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

$$|AE| = \frac{4}{5}|AC| \rightsquigarrow \vec{AE} = \frac{4}{5}\vec{AC}$$

Zadana baza: $B = (\vec{AB}, \vec{AD})$

$$\vec{BE} = -\frac{1}{5}\vec{AB} + \frac{4}{5}\vec{AD} \quad \vec{AB} \cdot \vec{AD} = \frac{15}{2}$$

$$|\vec{BE}| = \frac{\sqrt{109}}{5}$$

d) $\sphericalangle ABE = ?$

$$\varphi = \sphericalangle ABE = \sphericalangle(\vec{BA}, \vec{BE})$$

$$\cos \varphi = \frac{\vec{BA} \cdot \vec{BE}}{|\vec{BA}| \cdot |\vec{BE}|} = \frac{-1}{5 \cdot \frac{\sqrt{109}}{5}}$$

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$$\varphi = \arccos\left(-\frac{1}{\sqrt{109}}\right) \rightsquigarrow \varphi = 95^\circ 29' 47''$$

$$\vec{BE} \cdot \vec{BA} = -1$$

$$|AB| = 5, \quad |AD| = 3, \quad \sphericalangle DAB = 60^\circ$$

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