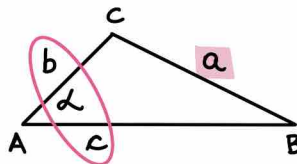
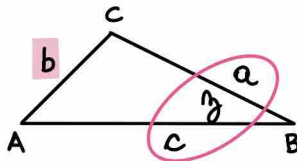
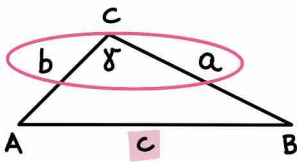


KOSINUSNI IZREK

Kosinusni izrek uporabljamo, kadar v trikotniku poznamo:

- dve stranici in kot MED njima in želimo izračunati tretjo stranico
- vse tri stranice ter želimo izračunati enega od kotov

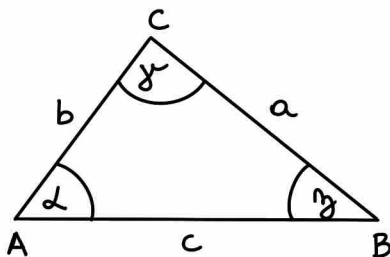
DANI STA DVE STRANICI IN KOT MED NJIMA



$$\begin{aligned}c^2 &= a^2 + b^2 - 2ab \cos \gamma \\ b^2 &= a^2 + c^2 - 2ac \cos \beta \\ a^2 &= b^2 + c^2 - 2bc \cos \alpha\end{aligned}$$

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DANE SO VSE TRI STRANICE

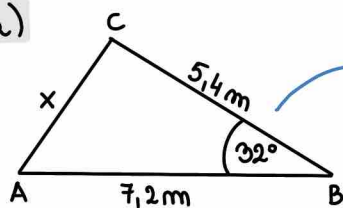


$$\begin{aligned}\cos \alpha &= \frac{b^2 + c^2 - a^2}{2bc} \\ \cos \beta &= \frac{a^2 + c^2 - b^2}{2ac} \\ \cos \gamma &= \frac{a^2 + b^2 - c^2}{2ab}\end{aligned}$$

→ stranica, ki je nasproti kotu je -

1. Na tri mesta matematično izračunaj neznano dolžino stranice.

a)



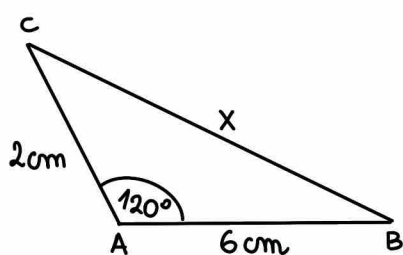
dami sta dve stranici in kot med njima

$$x^2 = 7.2^2 + 5.4^2 - 2 \cdot 7.2 \cdot 5.4 \cdot \cos 32^\circ$$

$$x^2 = 15.05578 / \sqrt{}$$

$$\underline{\underline{x = 3.88 \text{ m}}}$$

b)



$$x^2 = 2^2 + 6^2 - 2 \cdot 2 \cdot 6 \cdot \cos 120^\circ$$

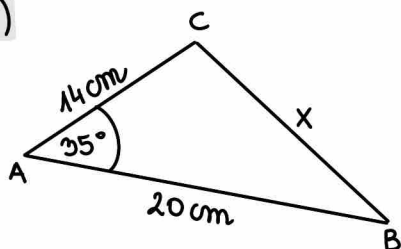
$$x^2 = 52 / \sqrt{}$$

$$\underline{\underline{x = 7.21 \text{ cm}}}$$

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c)



$$x^2 = 20^2 + 14^2 - 2 \cdot 20 \cdot 14 \cdot \cos 35^\circ$$

$$x^2 = 137.2749 / \sqrt{}$$

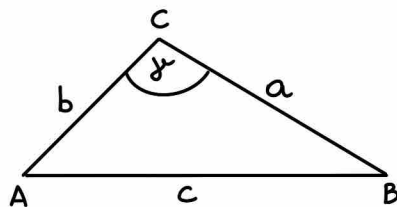
$$\underline{\underline{x = 11.7 \text{ cm}}}$$

2. Izračunaj največji kot trikotnika s stranicami $a = 4 \text{ cm}$, $b = 7 \text{ cm}$ in $c = 8 \text{ cm}$.

$$a = 4 \text{ cm}$$

$$b = 7 \text{ cm}$$

$$c = 8 \text{ cm}$$



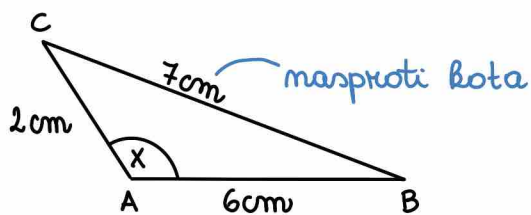
Največji kot leži nasproti najdaljše stranice.

$$\cos \gamma = \frac{a^2 + b^2 - c^2}{2ab}$$

$$\cos \gamma = \frac{4^2 + 7^2 - 8^2}{2 \cdot 4 \cdot 7} = \frac{1}{56}$$

$$\underline{\underline{\gamma = 89^\circ}}$$

3. Na minutor matančno izračunaj velikost kota x.



$$\cos X = \frac{2^2 + 6^2 - 7^2}{2 \cdot 2 \cdot 6}$$

nasprotna
priležni

$$\cos X = -\frac{3}{8}$$

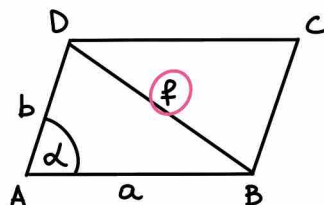
$$\underline{\underline{X = 112^\circ 1'}}$$

4. Dam je paralelogram s stranicama $a = 10$ cm in $b = 8$ cm ter kotom $\alpha = 60^\circ$. Notančno izračunaj dolžini obeh diagonal paralelograma.

$$a = 10 \text{ cm}$$

$$b = 8 \text{ cm}$$

$$\alpha = 60^\circ$$



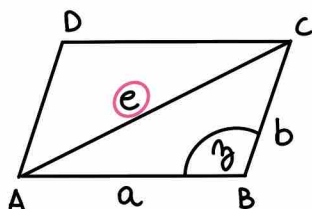
$\triangle ABD$ - dami sta dve stranici in kot med njima

$$f^2 = a^2 + b^2 - 2ab \cos \alpha$$

$$f^2 = 10^2 + 8^2 - 2 \cdot 10 \cdot 8 \cos 60^\circ$$

$$f^2 = 84 \quad | \sqrt{}$$

$$\underline{\underline{f = 2\sqrt{21} \text{ cm}}}$$



$$e^2 = a^2 + b^2 - 2ab \cos \gamma$$

$$e^2 = 10^2 + 8^2 - 2 \cdot 10 \cdot 8 \cdot \cos 120^\circ$$

$$e^2 = 244 \quad | \sqrt{}$$

$$\underline{\underline{e = 2\sqrt{61} \text{ cm}}}$$

$$\alpha + \gamma = 180^\circ$$

$$\gamma = 180^\circ - \alpha$$

$$\gamma = 180^\circ - 60^\circ$$

$$\gamma = 120^\circ$$

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