Vinokulmainen

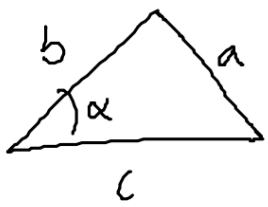
- sin / cos / tan + Pythag. toimivat vain suorak. kolmiossa

suorakk.

tasakylkk.

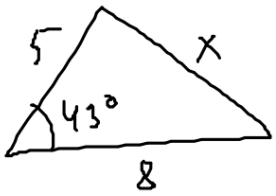
- kaikille kolmioille toimii sini- ja kosinilause

- Kosinilause



$$a^2 = b^2 + c^2 - 2bc \cdot \cos\alpha$$

Esim. a)

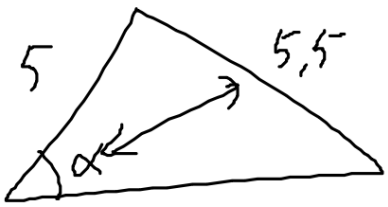


$x^2 = 5^2 + 8^2 - 2 \cdot 5 \cdot 8 \cdot \cos 43°$

$x^2 = 30,4917$ ||√

$x = 5,5219$ V: n. 5,5

b)



$$5{,}5^2 = 5^2 + 8^2 - 2 \cdot 5 \cdot 8 \cdot \cos\alpha$$

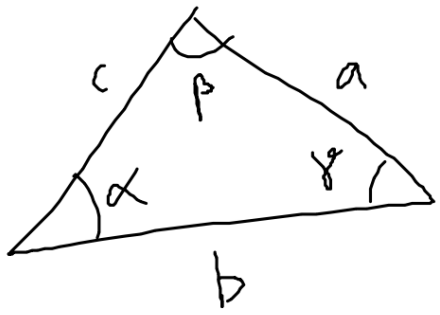
$$5{,}5^2 - 5^2 - 8^2 = -2 \cdot 5 \cdot 8 \cdot \cos\alpha$$

$$-58{,}75 = -80 \cdot \cos\alpha$$

$$0{,}734375 = \cos\alpha$$

$$\alpha = \cos^{-1} 0{,}734375 \approx 42{,}7°$$

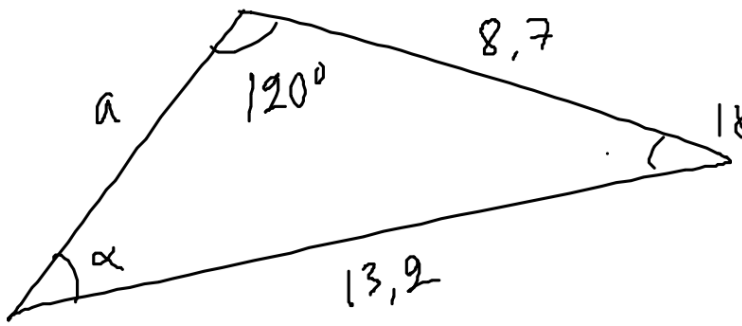
Sinilausc



$$\frac{a}{\sin\alpha} = \frac{b}{\sin\beta} = \frac{c}{\sin\gamma}$$

350.

a)



$180° - 120° - 34,8° = 25,2°$

a) $\frac{8,7}{\sin\alpha} = \frac{13,2}{\sin 120°}$

$13,2 \cdot \sin\alpha = 8,7 \cdot \sin 120° \quad \| : 13,2$

$\sin\alpha = \frac{8,7 \cdot \sin 120°}{13,2}$

$\sin\alpha = 0,57079$

$\alpha = \sin^{-1}(0,57079) \approx 34,8°$

b) $\frac{13,2}{\sin 120°} = \frac{a}{\sin 25,2°}$

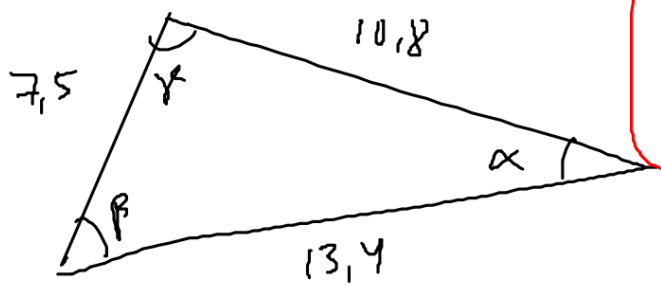
$a \cdot \sin 120° = 13,2 \cdot \sin 25,2°$

$a = \frac{13,2 \cdot \sin 25,2°}{\sin 120°}$

$a = 6,4897$

$\approx 6,5$

354



S. 53:
341, 342,
348, 349
352, 353

$\frac{10,8}{\sin\beta} = \frac{7,5}{\sin 34{,}00°}$

$\sin\beta = \frac{10,8 \cdot \sin 34{,}00°}{7,5}$

$\sin\beta = 0,8052$

$\beta = \sin^{-1}(0,8052)$

$= 53,60°$

$\gamma = 180° - \alpha - \beta = 92,37°$

$7,5^2 = 10,8^2 + 13,4^2 - 2 \cdot 10,8 \cdot 13,4 \cdot \cos\alpha$

$56,25 = 116,64 + 179,56 - 289,44 \cdot \cos\alpha$

$-237,95 = -289,44 \cdot \cos\alpha \quad // : -289,44$

$\cos\alpha = 0,8290$

$\alpha = \cos^{-1}(0,8290) = 34,00°$