

## Řešení pravoúhlého trojúhelníku – základní příklady

### Teorie

$$\sinus = \frac{\text{protilehlá odvěsna}}{\text{přepona}}$$

$$\cosinus = \frac{\text{přilehlá odvěsna}}{\text{přepona}}$$

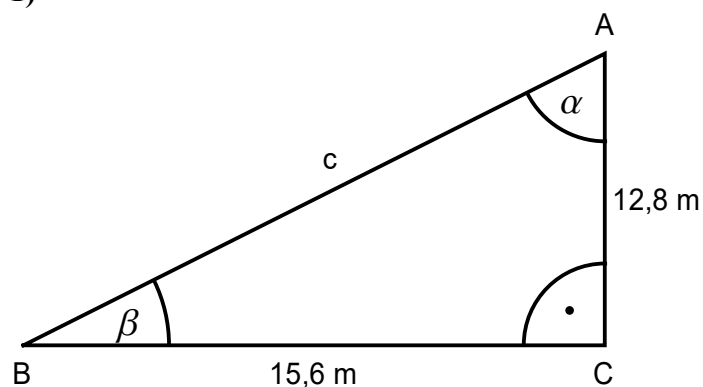
$$\text{tangens} = \frac{\text{protilehlá odvěsna}}{\text{přilehlá odvěsna}}$$

### Příklady

- 1)  $\triangle ABC$ :  $\gamma = 90^\circ$ ,  $a = 15,6$  m,  $b = 12,8$  m. Určete velikost úhlu  $\beta$ .
- 2)  $\triangle ABC$ :  $\beta = 90^\circ$ ,  $a = 18,4$  m,  $b = 21,5$  m. Určete velikost úhlu  $\gamma$ .
- 3)  $\triangle ABC$ :  $\alpha = 90^\circ$ ,  $\beta = 58,5^\circ$ ,  $a = 15,8$  m. Určete velikost strany  $b$ .
- 4)  $\triangle ABC$ :  $\beta = 90^\circ$ ,  $\gamma = 53,5^\circ$ ,  $c = 34,3$  m. Určete velikost strany  $a$ .
- 5)  $\triangle ABC$ :  $\alpha = 90^\circ$ ,  $\gamma = 28,3^\circ$ ,  $b = 24,9$  m. Určete velikost strany  $a$ .
- 6)  $\triangle ABC$ :  $\alpha = 90^\circ$ ,  $b = 8,3$  m,  $c = 10,5$  m. Určete velikost úhlu  $\gamma$ .
- 7)  $\triangle ABC$ :  $\gamma = 90^\circ$ ,  $c = 12,6$  m,  $b = 8,4$  m. Určete velikost úhlu  $\alpha$ .
- 8)  $\triangle ABC$ :  $\beta = 90^\circ$ ,  $\gamma = 65,8^\circ$ ,  $b = 13,7$  m. Určete velikost strany  $a$ .
- 9)  $\triangle ABC$ :  $\alpha = 90^\circ$ ,  $\beta = 35,6^\circ$ ,  $b = 9,4$  m. Určete velikost strany  $c$ .
- 10)  $\triangle ABC$ :  $\gamma = 90^\circ$ ,  $\beta = 65,9^\circ$ ,  $a = 8,6$  m. Určete velikost strany  $b$ .

### Řešení

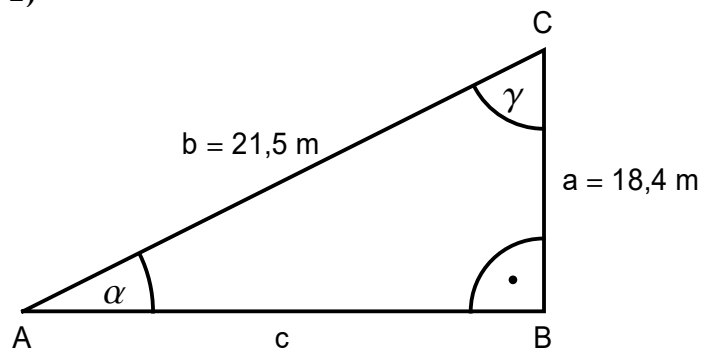
1)



$$\operatorname{tg} \beta = \frac{b}{a} = \frac{12,8}{15,6} = 0,8205$$

$$\beta = 39,37^\circ$$

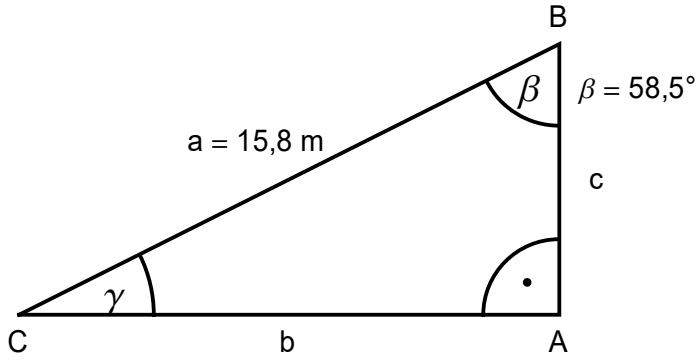
2)



$$\cos \gamma = \frac{a}{b} = \frac{18,4}{21,5} = 0,8558$$

$$\gamma = 31,15^\circ$$

3)



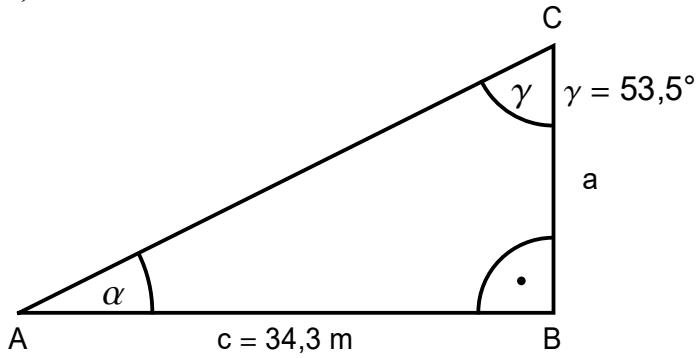
$$\sin \beta = \frac{b}{a} \quad | \cdot a$$

$$a \cdot \sin \beta = b$$

$$b = 15,8 \cdot \sin 58,5^\circ$$

$$b = 13,47 \text{ m}$$

4)



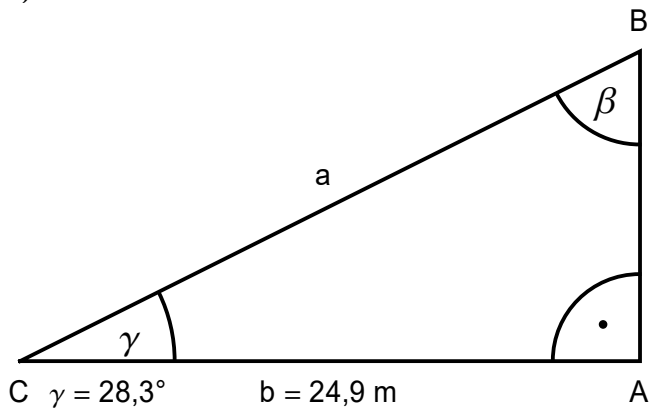
$$\operatorname{tg} \gamma = \frac{c}{a} \quad | \cdot a$$

$$a \cdot \operatorname{tg} \gamma = c \quad | : \operatorname{tg} \gamma$$

$$a = \frac{c}{\operatorname{tg} \gamma} = \frac{34,3}{\operatorname{tg} 53,5^\circ}$$

$$a = 25,4 \text{ m}$$

5)



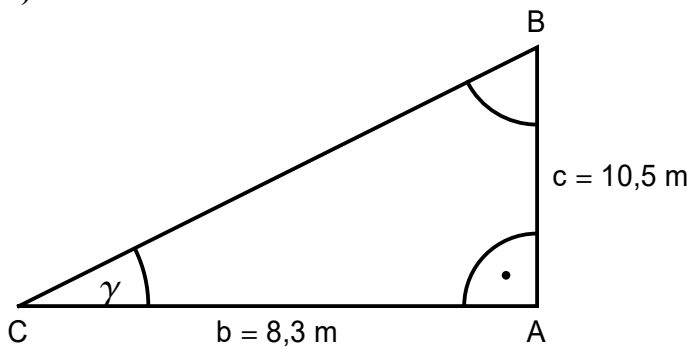
$$\cos \gamma = \frac{b}{a} \quad | \cdot a$$

$$a \cdot \cos \gamma = b \quad | : \cos \gamma$$

$$a = \frac{b}{\cos \gamma} = \frac{24,9}{\cos 28,3^\circ}$$

$$a = 28,3 \text{ m}$$

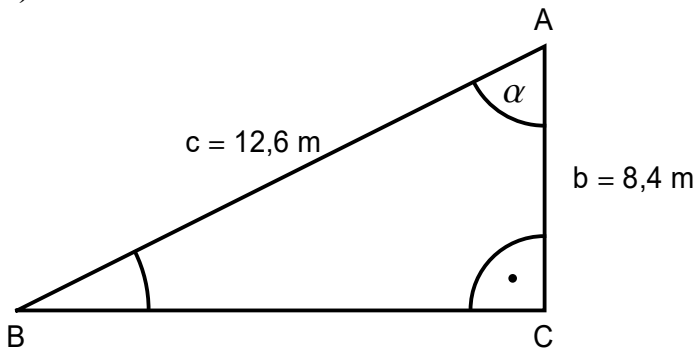
6)



$$\operatorname{tg} \gamma = \frac{c}{b} = \frac{10,5}{8,3} = 1,265$$

$$\gamma = 51,67^\circ$$

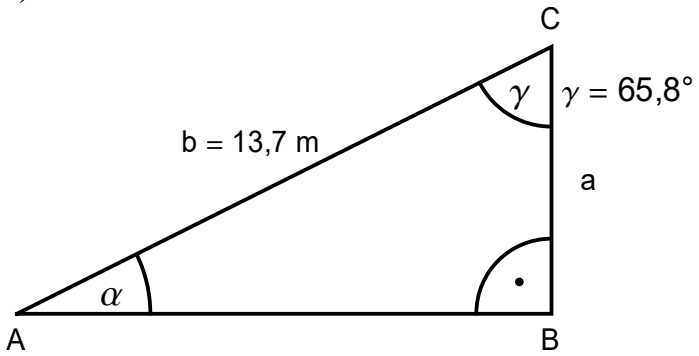
7)



$$\cos \alpha = \frac{b}{c} = \frac{8,4}{12,6} = 0,6667$$

$$\alpha = 48,19^\circ$$

8)

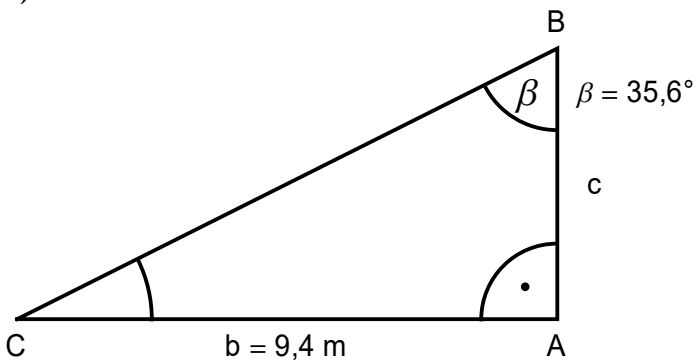


$$\cos \gamma = \frac{a}{b}$$

$$b \cdot \cos \gamma = a$$

$$a = 13,7 \cdot \cos 65,8 = 5,62 \text{ m}$$

9)

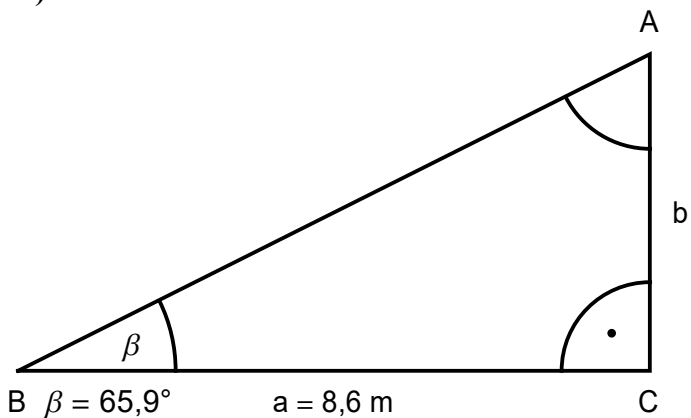


$$\operatorname{tg} \beta = \frac{b}{c}$$

$$c \cdot \operatorname{tg} \beta = b \quad / : \operatorname{tg} \beta$$

$$c = \frac{b}{\operatorname{tg} \beta} = \frac{9,4}{\operatorname{tg} 35,6^\circ} = 13,13 \text{ m}$$

10)



$$\operatorname{tg} \beta = \frac{b}{a}$$

$$a \cdot \operatorname{tg} \beta = b$$

$$b = 8,6 \cdot \operatorname{tg} 65,9^\circ = 19,23 \text{ m}$$