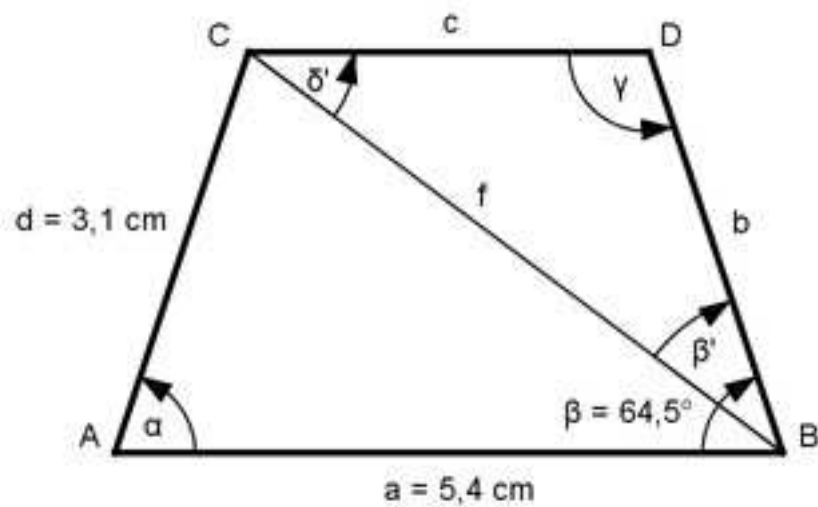


Trigonometrie Aufgabe 165

Wie groß ist die Seite c des gleichschenkligen Trapezes?



$\alpha = \beta$ wegen gleichschenkligen Trapez

$$\gamma = \frac{360^\circ - 2 * \beta}{2} = \frac{360^\circ - 2 * 64,5^\circ}{2} = 115,5^\circ$$

Im Dreieck ABC:

Fall SWS:

Cosinussatz:

$$f^2 = a^2 + d^2 - 2 * a * d * \cos \alpha$$

$$f^2 = 5,4^2 + 3,1^2 - 2 * 5,4 * 3,1 * \cos 64,5^\circ$$

$$f^2 = 5,4^2 + 3,1^2 - 2 * 5,4 * 3,1 * 0,4305 =$$

$$f^2 = 24,4 \quad |\sqrt{\quad}$$

$$f = 4,9 \text{ cm}$$

Im Dreieck CBD:

$$b = d = 3,1 \text{ cm}$$

Fall SSW:

Sinussatz:

$$\frac{f}{\sin \gamma} = \frac{b}{\sin \delta'} \quad | \cdot \sin \delta'$$

$$\frac{f * \sin \delta'}{\sin \gamma} = b \quad | \cdot \sin \gamma$$

$$f * \sin \delta' = b * \sin \gamma \quad | :f$$

$$\sin \delta' = \frac{b * \sin \gamma}{f} = \frac{3,1 \text{ cm} * \sin 115,5^\circ}{4,9 \text{ cm}} = \frac{3,1 \text{ cm} * 0,9026}{4,9 \text{ cm}} = 0,571$$

$$\delta' = 34,8^\circ$$

$$\beta' = 180^\circ - \gamma - \delta' = 180^\circ - 115,5^\circ - 34,8^\circ = 29,7^\circ$$

Fall SWW:

$$\frac{c}{\sin \beta'} = \frac{f}{\sin \gamma} \quad | \cdot \sin \beta'$$

$$c = \frac{f * \sin \beta'}{\sin \gamma} = \frac{4,9 \text{ cm} * \sin 29,7^\circ}{\sin 115,5^\circ} = \frac{4,9 \text{ cm} * 0,4955}{0,9026} = \mathbf{2,7 \text{ cm}}$$