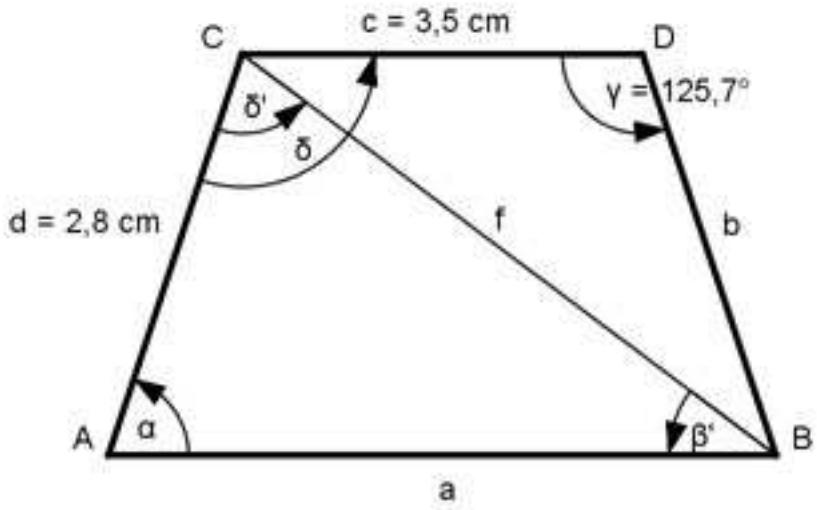
Trigonometrie Aufgabe 167

Wie groß ist die Seite a des gleichschenkligen Trapezes?



b = d = 2,8 cm

Im Dreieck CBD:

Fall SWS:

Cosinussatz:

$f^2 = b^2 + c^2 - 2 * b * c * \cos \gamma$

$f^2 = 2{,}8^2 + 3{,}5^2 - 2 * 2{,}8 * 3{,}5 * \cos 125{,}7°$

$f^2 = 2{,}8^2 + 3{,}5^2 - 2 * 2{,}8 * 3{,}5 * (-0{,}5835) =$

$f^2 = 31{,}5 \mid \sqrt{}$

f = 5,6 cm

$\delta = \gamma$

$\alpha = 180° - \delta = 180° - 125{,}7° = 54{,}3°$ (Stufenwinkel)

Fall SSW:

Sinussatz:

$$\frac{f}{\sin \alpha} = \frac{d}{\sin \beta'} \mid *\sin \beta'$$

$$\frac{f * \sin \beta'}{\sin \alpha} = d \mid *\sin \alpha$$

$$f * \sin \beta' = d * \sin \alpha \mid :f$$

$$\sin \beta' = \frac{d * \sin \alpha}{f} = \frac{2{,}8 \text{ cm} * \sin 54{,}3°}{5{,}6 \text{ cm}} = \frac{2{,}8 \text{ cm} * 0{,}8121}{5{,}6 \text{ cm}} = 0{,}4061$$

$$\beta' = 24°$$

$$\delta' = 180 - \alpha - \beta' = 180° - 54{,}3° - 24° = 101{,}7°$$

Fall SWW:

Sinussatz:

$$\frac{a}{\sin \delta'} = \frac{f}{\sin \alpha} \mid *\sin \delta'$$

$$\mathbf{a =} \frac{f * \sin \delta'}{\sin \alpha} = \frac{5{,}6 \text{ cm} * \sin 101{,}7°}{\sin 54{,}3°} = \frac{5{,}6 \text{ cm} * 0{,}9792}{0{,}8121} = \mathbf{6{,}8 \text{ cm}}$$