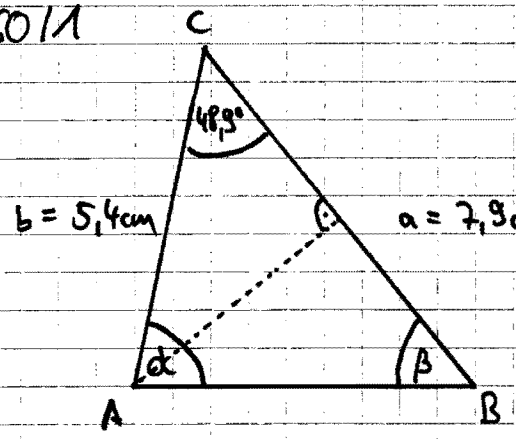
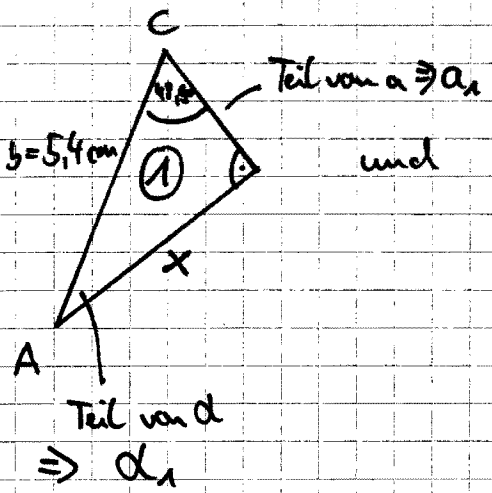
S. 60 / 1

a)

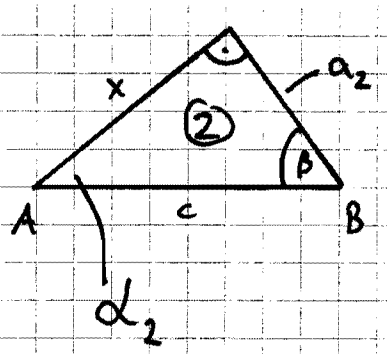


I Zerlege das Dreieck in zwei rechtwinklige Dreiecke



Teil von a ⇒ a_1

und



II Rechne in Dreieck (1)

$\alpha_1 = 180° - 90° - 48{,}9° = 41{,}1°$

$\cos\gamma = \frac{\text{Ankathete}}{\text{Hypotenuse}} = \frac{a_1}{b}$

$\cos 48{,}9° = \frac{a_1}{5{,}4\,cm}$

$a_1 = \cos(48{,}9°) \cdot 5{,}4\,cm$

$a_1 = 3{,}55\,cm$

III $\hookrightarrow a = a_1 + a_2$

$\Rightarrow a_2 = a - a_1 = 7{,}9\,cm - 3{,}55\,cm = \underline{4{,}35\,cm}$

IV Gegenkathete x: $\sin\gamma = \frac{x}{b}$

$\sin 48{,}9° = \frac{x}{5{,}4\,cm}$

$x = \sin(48{,}9°) \cdot 5{,}4\,cm = \underline{4{,}07\,cm}$

V Rechne in Dreieck (2)

$$\tan \alpha_2 = \frac{\text{Geg}}{\text{Ank}} = \frac{a_2}{x}$$

$$\tan \alpha_2 = \frac{a_2}{x} = \frac{4{,}35\,\text{cm}}{4{,}07\,\text{cm}}$$

$$\alpha_2 = \tan^{-1}\left(\frac{4{,}35}{4{,}07}\right) = \underline{46{,}90^\circ}$$

$$\alpha = \alpha_1 + \alpha_2 = 41{,}1^\circ + 46{,}9^\circ = \underline{88^\circ}$$

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

$= 180^\circ - 48{,}9^\circ - 88^\circ = \underline{43{,}1^\circ}$

VI $\sin \alpha_2 = \frac{\text{Geg}}{\text{Hyp}} = \frac{a_2}{c}$

$$\sin 46{,}9^\circ = \frac{4{,}35\,\text{cm}}{c}$$

$$\Rightarrow c = \frac{4{,}35\,\text{cm}}{\sin 46{,}9^\circ} = \underline{5{,}96\,\text{cm}}$$