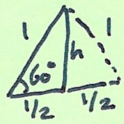
SA2 Math. 5A Gruppe A

① Richtig ist nur nr. 3 $\frac{\alpha}{360} = \frac{\varphi}{2\pi}$

② 1F, 2R, 3F, 4F, 5F, 6R F=falsch, R=richtig

③ Richtig sind nr. 1, nr. 3 und nr. 5

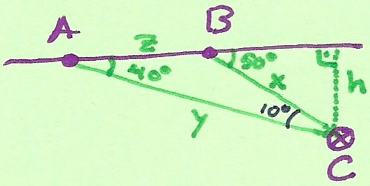
④ Durch Spiegelung ergibt sich ein gleichseitiges Δ



$h^2 = 1^2 - \left(\frac{1}{2}\right)^2 = 1 - \frac{1}{4} = \frac{3}{4} \Rightarrow h = \sqrt{\frac{3}{4}} = \frac{1}{2}\sqrt{3}$

$\cos 60° = \frac{1/2}{1} = \frac{1}{2}, \quad \sin 60° = \frac{h}{1} = h = \frac{1}{2}\sqrt{3}$

⑤

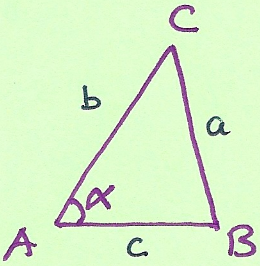


a) $z = \frac{1}{3} \cdot 24 = 8$ km

$\frac{z}{\sin 10°} = \frac{x}{\sin 40°} \Rightarrow x = \frac{\sin 40°}{\sin 10°} \cdot 8 = 29{,}6$ km

b) $h = x \cdot \sin 50° = 29{,}6 \cdot \sin 50° = 22{,}7$ km

⑥



$a = 5{,}5 \quad b = 6 \quad c = 4$

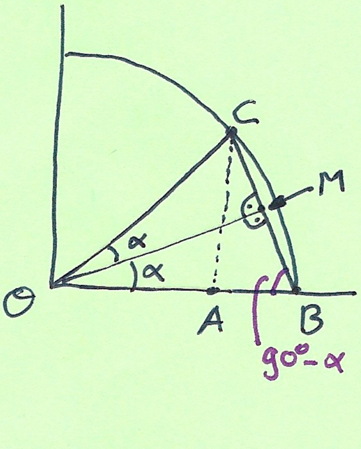
$a^2 = b^2 + c^2 - 2bc\cos\alpha$

$(5{,}5)^2 = 6^2 + 4^2 - 2 \cdot 6 \cdot 4 \cdot \cos\alpha$

$30{,}25 = 52 - 48 \cdot \cos\alpha$

$\cos\alpha = \frac{52 - 30{,}25}{48} \cong 0{,}45 \Rightarrow \alpha \cong 63°$

⑦



(a) In $\Delta OMB \to \sphericalangle OBM = 90° - \alpha$

daher in $\Delta CAB \Rightarrow \sphericalangle ACB = 90° - (90° - \alpha) = \alpha$

(b) ΔOBC ist gleichschenkelig

$\Rightarrow OM$ teilt BC in zwei

und $\Delta OMC = \Delta OMB$, nur in Spiegelbild $\Rightarrow |MC| = |MB|$

und $\frac{|MB|}{|OB|} = \sin\alpha \Rightarrow |MB| = \sin\alpha$

(c) $|AB| = |BC| \cdot \sin\alpha = 2 \cdot \sin^2\alpha$ $\quad |OA| = \cos(2\alpha)$ (per Definitionem)

$\Rightarrow |OA| = 1 - |AB| = 1 - 2\sin^2\alpha$

⑧ Auf anderem Blatt.