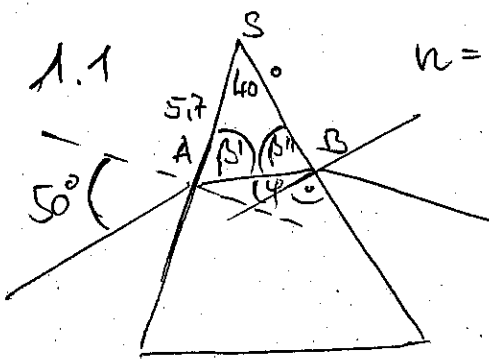


Lösungsmuster 2. SAT 106 I

9.2.06



$n = 1,5$

$$\frac{\sin \alpha}{\sin \beta} = 1,5$$

$$\sin \beta = \frac{\sin \alpha}{1,5} = 0,5107 \quad (1)$$

$$\underline{\underline{\beta = 30,71^\circ}} \quad \checkmark$$

1.2.

$$\beta' = 90^\circ - 30,71^\circ = \underline{\underline{59,29^\circ}} \quad \checkmark$$

$$\beta'' = 180^\circ - 59,29^\circ - 40^\circ = \underline{\underline{80,71^\circ}} \quad \checkmark$$

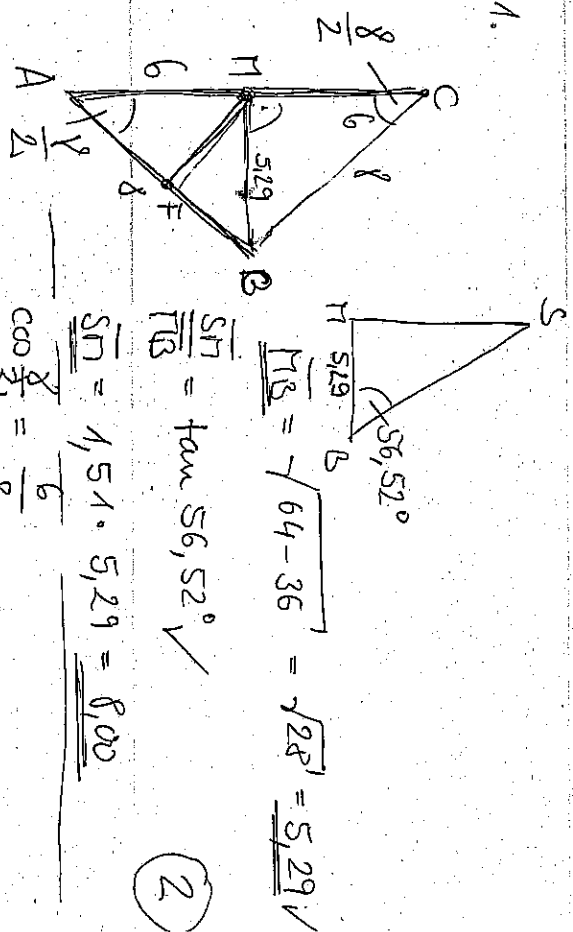
$$\frac{\overline{AB}}{\sin 40^\circ} = \frac{5,7}{\sin 80,71^\circ} \quad (3)$$

$$\overline{AB} = \underline{\underline{3,71}} \quad \checkmark$$

1.3.

$$\varphi = 90^\circ - 80,71^\circ = \underline{\underline{9,29^\circ}} \quad \checkmark \quad (1)$$

2.1.



$$\overline{HS} = \sqrt{64 - 36} = \sqrt{28} = \underline{5.29} \checkmark$$

$$\frac{\overline{SH}}{\overline{TB}} = \tan 56,52^\circ \checkmark$$

$$\overline{SH} = 1,51 \cdot 5,29 = \underline{8.00}$$

$$\cos \frac{\gamma}{2} = \frac{6}{8}$$

$$\frac{\gamma}{2} = \underline{41,41^\circ} \checkmark$$

$$\frac{\overline{HE}}{\overline{NA}} = \sin 41,41^\circ$$

$$\overline{EM} = 6 \cdot \sin 41,41^\circ = \underline{3.92} \checkmark$$

$$\text{low } \varphi = \frac{8}{3,92}$$

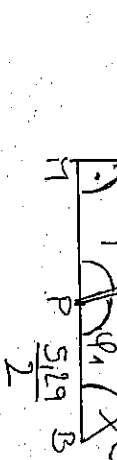
$$\varphi = \underline{63,62^\circ} \checkmark$$

$$\overline{SB} = \sqrt{8^2 + 5,29^2} = \sqrt{92} = \underline{9.59} \checkmark$$

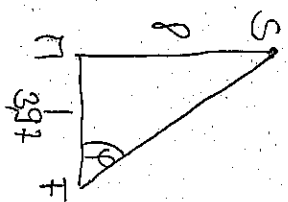
$$\overline{Q_1 B} = 9,59 - 2 = \underline{7,59}$$

$$\overline{Q_1 P}^2 = 7,59^2 + 2,65^2 - 2 \cdot 7,59 \cdot 2,65 \cdot \cos 56,52^\circ$$

$$\overline{Q_1 P} = \sqrt{42,41} = \underline{6.51} \checkmark$$



2.2



3.

$$\sin(120^\circ - \alpha) - \sin(\alpha + 60^\circ) = \frac{\sqrt{3}}{2}$$

$$\sin 120^\circ \cos \alpha - \cos 120^\circ \sin \alpha - (\sin \alpha \cos 60^\circ + \cos \alpha \sin 60^\circ) = \frac{\sqrt{3}}{2}$$

$$\frac{\sqrt{3}}{2} \cos \alpha - (-\frac{1}{2}) \sin \alpha - (\frac{1}{2} \sin \alpha + \frac{\sqrt{3}}{2} \cos \alpha) = \frac{\sqrt{3}}{2}$$

$$\frac{\sqrt{3}}{2} \cos \alpha + \frac{1}{2} \sin \alpha - \frac{1}{2} \sin \alpha - \frac{\sqrt{3}}{2} \cos \alpha = \frac{\sqrt{3}}{2}$$

$$\sqrt{0} = \frac{\sqrt{3}}{2}$$

$$L = \emptyset \checkmark$$

(4)

$$\varphi_1 = \arccos \frac{7,59^2 - 6,51^2 - 2,65^2}{-2 \cdot 6,51 \cdot 2,65}$$

$$\varphi_1 = \arccos -0,2378 = \underline{103,76^\circ} \quad (4.1)$$

2.4

$$\tan \bar{\varphi} = \frac{8}{2,65}$$

$$\bar{\varphi} = \underline{71,67^\circ} \checkmark$$

$$\varphi_{\max} = 108,33^\circ \quad [180^\circ - 71,67^\circ] \quad (2)$$

2.5

$$\overline{PQ} = \frac{2,21}{\sin(\varphi + 56,52^\circ)}$$

Wird minimal, wenn der Nenner maximal wird. \checkmark

$$\sin(\varphi + 56,52^\circ) = 1 \quad \checkmark \quad \varphi + 56,52^\circ = 90^\circ$$

$$\varphi = 90^\circ - 56,52^\circ = \underline{33,48^\circ} \quad (3)$$