

s.90

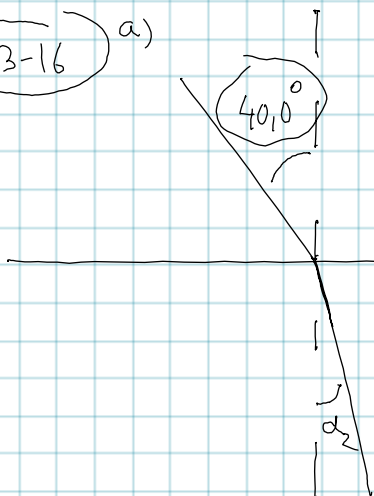
(T3-15) a) Valon nopeus jäässä on  $2,29 \cdot 10^8$  m/s. Laske jään taitekerroin valolle

Ratkaisu: 
$$n = \frac{c}{c_{\text{jää}}} = \frac{2,998 \cdot 10^8 \text{ m/s}}{2,29 \cdot 10^8 \text{ m/s}} \approx \underline{\underline{1,31}}$$

b) Lasin taitekerroin valolle on 1,51, laske valon nopeus lasissa.

Ratkaisu: 
$$n = \frac{c}{c_{\text{las}}} \quad , \quad c_{\text{las}} = \frac{c}{n} = \frac{2,998 \cdot 10^8 \text{ m/s}}{1,51} \approx \underline{\underline{1,99 \cdot 10^8 \text{ m/s}}}$$

(T3-16) a)



$$\frac{\sin \alpha_1}{\sin \alpha_2} = \frac{n_2}{n_1} \quad || \cdot x_1$$

$$n_1 \cdot \sin \alpha_1 = n_2 \cdot \sin \alpha_2$$

$$\sin \alpha_2 = \frac{n_1 \cdot \sin \alpha_1}{n_2}$$

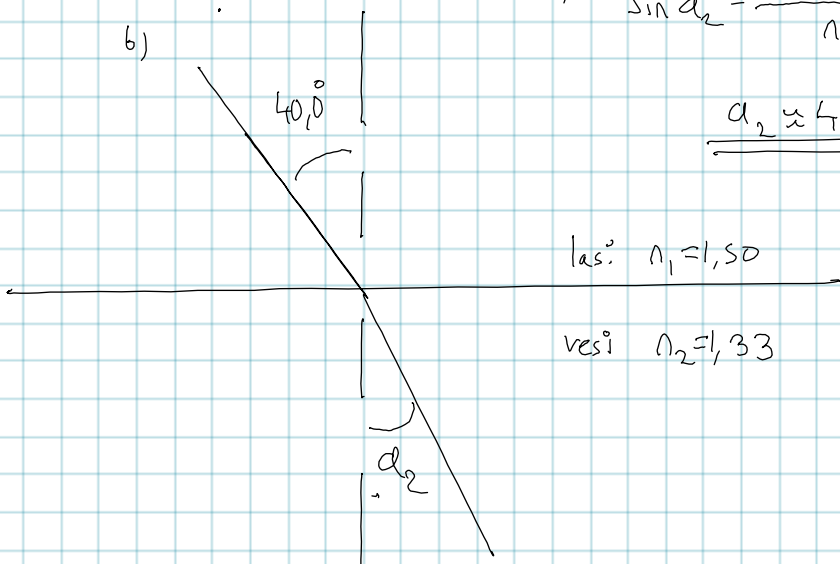
$$\sin \alpha_2 = \frac{1,00 \cdot \sin 40,0^\circ}{1,33}$$

$$\underline{\underline{\alpha_2 \approx 28,9^\circ}}$$

$$\sin \alpha_2 = \frac{n_1 \cdot \sin \alpha_1}{n_2} = \frac{1,50 \cdot \sin 40,0^\circ}{1,33}$$

$$\underline{\underline{\alpha_2 \approx 46,5^\circ}}$$

b)



las:  $n_1 = 1,50$

vesi:  $n_2 = 1,33$