

T2-5 ε.55

$$v_0 = 340 \text{ m/s}$$

$$v_h = 260 \text{ m/s}$$

a) $f = 1000 \text{ Hz}$

$$\lambda_0 = \frac{v_0}{f} = \frac{340 \text{ m/s}}{1000 \frac{1}{s}} = 0,34 \text{ m}$$

$$\lambda_h = \frac{v_h}{f} = \frac{260 \text{ m/s}}{1000 \frac{1}{s}} = 0,26 \text{ m}$$

b) $n_{12} = \frac{v_1}{v_2} = \frac{340 \text{ m/s}}{260 \text{ m/s}} \approx 1,3$

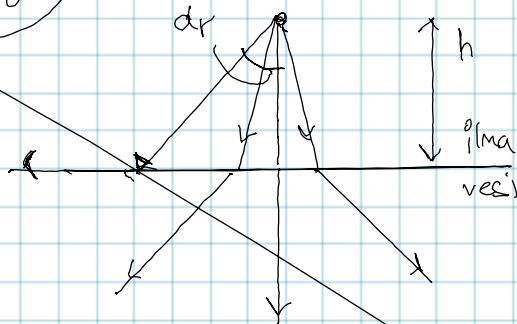
c) $\frac{\sin \alpha_1}{\sin \alpha_2} = \frac{v_1}{v_2} \quad \sin \alpha_2 = \frac{v_2}{v_1} \cdot \sin \alpha_1$

$$\sin \alpha_2 = \frac{260 \text{ m/s}}{340 \text{ m/s}} \cdot \sin 45^\circ \approx 0,5407$$

$$\alpha_2 \approx 32,7^\circ$$

$$\text{Vastaus: } (45^\circ - 32,7^\circ) \approx \underline{\underline{12^\circ}}$$

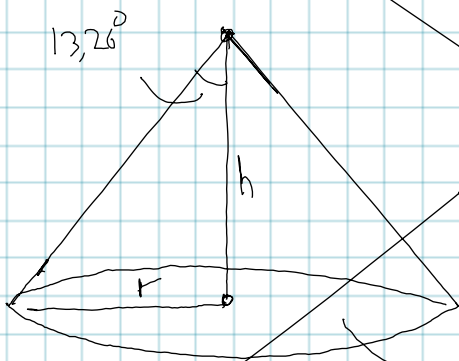
T2-6



$$f = \frac{v}{\lambda} = \frac{343 \text{ m/s}}{0,78 \text{ m}} \approx 440 \text{ Hz}$$

$$\sin \alpha_f = \frac{\lambda_1}{\lambda_2} = \frac{0,78 \text{ m}}{3,4 \text{ m}}$$

$$\alpha_f \approx 13,26^\circ$$



$$\tan 13,26^\circ = \frac{r}{h}$$

$$r = h \cdot \tan 13,26^\circ$$

$$r = 8,4 \text{ m} \cdot \tan 13,26^\circ$$

$$r \approx 1,98 \text{ m}$$

$$A = \pi r^2 = \pi \cdot (1,98 \text{ m})^2 \approx 12,31 \text{ m}^2$$

$$\text{Vastaus: } 12,3 \text{ m}^2$$