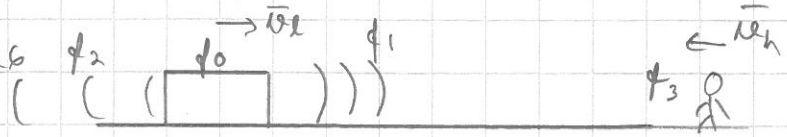
$$v_{max} = b_t \approx \frac{8\,cm - 0\,cm}{3\,s - 2.5\,s} = \frac{8\,cm}{0.5\,s} = 16\,\frac{cm}{s}$$

8.26



$v_l = 28\,\frac{m}{s}$
$f_0 = 670\,Hz$
$v_h = 12\,\frac{m}{s}$
$v = 336\,\frac{m}{s}$

Doppler-ilmiö
Tämiaallot etenevät taajuudella

$$f_1 = f_0 \frac{v}{v - v_l} \quad (> f_0)$$

Havaitsijan kiihtyen tätä ilmiötä kuullaan taajuus

$$f_3 = f_1 \frac{v + v_h}{v} \quad (> f_1)$$

$$= f_0 \frac{\cancel{v}}{v - v_l} \cdot \frac{v + v_h}{\cancel{v}} = f_0 \frac{v + v_h}{v - v_l} = 670\,Hz \cdot \frac{336\,\frac{m}{s} + 12\,\frac{m}{s}}{336\,\frac{m}{s} - 28\,\frac{m}{s}}$$

$$\approx 760\,Hz$$

2023/6 1. $L_1 = 95\,dB$ $\quad L_1 = 10 \lg \frac{I_1}{I_0}$

$$L_5 = 10 \lg \frac{I_5}{I_0} = 10 \lg \frac{5 I_1}{I_0} = 10 \lg \left(5 \cdot \frac{I_1}{I_0}\right)$$

$$= 10 \left(\lg 5 + \lg \frac{I_1}{I_0}\right) = 10 \lg 5 + \underbrace{10 \lg \frac{I_1}{I_0}}_{= L_1}$$

$$\approx 6{,}99\,dB + 95\,dB \approx 102\,dB \approx 100\,dB$$

2. $L_x = 10 \lg \frac{x I_1}{I_0} = \ldots = 10 \lg x + L_1 = 75\,dB$

$$\Leftrightarrow 10 \lg x \overset{dB}{=} -20\,dB \quad | : 10\,dB$$

$$\Leftrightarrow \lg x = -2 \quad | \; 10^{(\cdot)}$$

$$\Leftrightarrow 10^{\lg x} = 10^{-2} \quad \Leftrightarrow x = 10^{-2} = \frac{1}{10^2} = 0{,}01 = 1\,\%$$

$\Rightarrow$ 1 %

3.