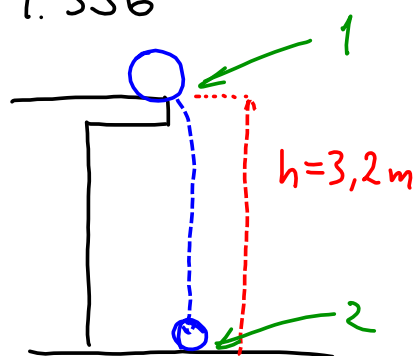


4.27

$$\eta = \frac{P_{ut}}{P_{inn}} = \frac{6 \text{ [W]}}{60 \text{ [W]}} = 0,1 \Rightarrow 10\%$$

4.336

Mekanisk energi E_m bevares

$$E_m = E_p + E_k$$

$$E_k = \frac{1}{2} m v^2$$

$$E_p = mgh$$

$$E_{p1} + E_{k1} = E_{p2} + E_{k2}$$

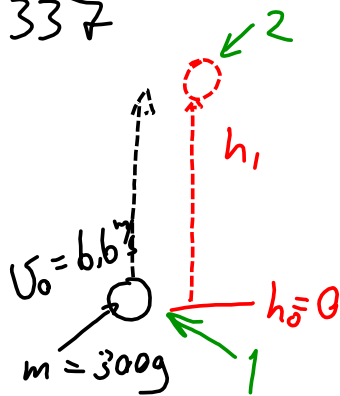
$$mgh = \frac{1}{2} m v^2$$

$$gh = \frac{1}{2} v^2$$

$$v = \sqrt{2 \cdot g \cdot h} = \sqrt{2 \cdot 9,81 \left[\frac{\text{m}}{\text{s}^2} \right] \cdot 3,2 \left[\text{m} \right]}$$

$$= 7,2 \left[\frac{\text{m}}{\text{s}} \right]$$

4.337



$$a) \quad E_{p1} + E_{k1} = E_{p2} + E_{k2}$$

$\uparrow 0 \quad (h=0)$
 $\uparrow 0 \quad (v=0)$

$$E_{k1} = E_{p2}$$

$$\frac{1}{2} m v_0^2 = m g h_1$$

$$\frac{1}{2} v_0^2 = g h_1$$

$$h_1 = \frac{v_0^2}{2 \cdot g} = \frac{6.6^2}{2 \cdot 9.81} = 2.2 \text{ m}$$

$$b) \quad h = 2.0 \text{ m}$$

$$E_{p2} = m g h = 0.300 \cdot 9.81 \cdot 2.0 = 5.88 \text{ J}$$

$$E_{k1} = \frac{1}{2} m v^2 = \frac{1}{2} \cdot 0.300 \cdot 6.6^2 = 6.53 \text{ J}$$

$$E_{\text{tap}} = E_{k1} - E_{p2} = 0.65 \text{ J}$$

$$\frac{E_{\text{tap}}}{E_{k1}} = \frac{0.65 \text{ J}}{6.53 \text{ J}} = 0.1 \Rightarrow 10\% \text{ av energien går tapt}$$

4.363

$$a) P = \frac{E}{t} \Rightarrow t = \frac{E}{P} = \frac{mgh}{735 [W]} = \frac{54 \cdot 9,81 \cdot 11,5 \text{ [kg} \cdot \frac{m}{s^2} \cdot m]}{735 [W]}$$

$$= \frac{6092 \text{ [W} \cdot \text{s}]}{735 [W]} = 8,3 [s]$$

$$b) t = \frac{m_2 \cdot g \cdot h}{735} = \frac{84 \cdot 9,81 \cdot 11,5}{735} = 12,9 [s]$$