

$P1$

$$p = \frac{F_1}{S_1} \quad p = \frac{F_2}{S_2}$$

$$\Rightarrow \frac{F_1}{S_1} = \frac{F_2}{S_2}$$

$m_1 \cdot g$ (pointing to F_1)

$m_2 \cdot g$ (pointing to F_2)

$$\Rightarrow \frac{m_1 \cdot g}{S_1} = \frac{m_2 \cdot g}{S_2}$$

$$\Rightarrow \frac{m_1}{S_1} \cdot g = \frac{m_2}{S_2} \cdot g \quad \downarrow \div g$$

$$\Rightarrow \frac{m_1}{S_1} = \frac{m_2}{S_2} \quad \Rightarrow \quad m_1 = \frac{m_2}{S_2} \cdot S_1 = m_2 \frac{S_1}{S_2}$$

$$\text{Calcul: } m_1 = 5 \cdot \frac{0,5}{1,5} = \frac{2,5}{1,5} = \frac{25}{15}$$

$$\Rightarrow m_1 = \frac{5}{3} \approx 1,67$$

$$\boxed{P2} \quad C \approx 4 \cdot 3,1415 \cdot 8,854 \cdot 10^{-12} \cdot \frac{1}{\frac{1}{3} - \frac{1}{5}}$$

$$= 4 \cdot 3,1415 \cdot 8,854 \cdot 10^{-12} \cdot \frac{1}{\frac{2}{15}}$$

$$= 4 \cdot \frac{15}{2} \cdot 3,1415 \cdot 8,854 \cdot 10^{-12}$$

$$= 30 \cdot 3,1415 \cdot 8,854 \cdot 10^{-12}$$

$$\approx 834,45 \cdot 10^{-12} \approx 8,3445 \cdot 10^{-10}$$

$$\boxed{P3} \quad U = R \cdot I \Rightarrow \frac{U}{R} = I$$

$$U = R_1 \cdot I \Rightarrow \frac{U}{R_1} = I_1$$

$$U = R_2 \cdot I \Rightarrow \frac{U}{R_2} = I_2$$

$$I = I_1 + I_2 \Rightarrow \frac{U}{R} = \frac{U}{R_1} + \frac{U}{R_2}$$

$$\Rightarrow \frac{1}{R} \cdot U = \left(\frac{1}{R_1} + \frac{1}{R_2} \right) \cdot U$$

$$\Rightarrow \frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$$

P4

$$T = 2\pi \sqrt{\frac{I}{m \cdot g \cdot r_G}}$$

$$\Leftrightarrow \frac{T}{2\pi} = \sqrt{\frac{I}{m \cdot g \cdot r_G}}$$

$$\Leftrightarrow \frac{T^2}{4\pi^2} = \frac{I}{m \cdot g \cdot r_G}$$

$$\Leftrightarrow \frac{T^2 \cdot m \cdot g \cdot r_G}{4\pi^2} = I$$

$$\Leftrightarrow I = \frac{T^2 \cdot m \cdot g \cdot r_G}{4\pi^2}$$

Calcul:

$$T \approx 2 \cdot 3,1415 \cdot \sqrt{\frac{0,25}{3 \cdot 9,81 \cdot 1,5}}$$

$$T \approx 6,2830 \cdot \sqrt{0,005663156}$$

$$T \approx 6,2830 \cdot 0,07525394$$

$$T \approx 0,4728$$