

#254

8.8 = 3 8.8.2

3.49.2  $m = 5 \text{ kg}$

$$N = \frac{F}{t} = \frac{F \cdot s}{t} = \frac{m \cdot a \cdot s}{t}$$

$$S = A + Bt + Ct^2 + Dt^3$$

$$v = S'(t) = B + 2Ct + 3Dt^2$$

$$A = 5 \text{ m}$$

$$a = v'(t) = 2C + 6Dt$$

$$B = -2 \frac{\text{m}}{\text{s}}$$

$$C = 3 \frac{\text{m}}{\text{s}^2}$$

$$D = (-0.2) \frac{\text{m}}{\text{s}^3}$$

$$t = 2 \text{ s}$$

$$N = ?$$

$$N = \frac{2m \cdot (C + 3Dt)(A + Bt + Ct^2 + Dt^3)}{t}$$

$$N = \frac{2 \cdot 5 \cdot (3 + 3 \cdot 0.2 \cdot 2) \cdot (5 + 2 \cdot 2 + 3 \cdot 2^2 - 0.2 \cdot 2^3)}{2} =$$

$$= 136.8 \text{ (N)}$$

$$B: N = 136.8 \text{ N}$$

13.68.2  $\sigma_1 = 17.7 \cdot 10^9 \frac{\text{N}}{\text{m}^2}$

$$\sigma_2 = 53.1 \cdot 10^9 \frac{\text{N}}{\text{m}^2}$$

$$E = ?$$

$$\vec{E}_1 \uparrow$$

$$\vec{E}_2 \uparrow$$

$$\vec{E}_2 \downarrow$$

$$E = E_2 - E_1 =$$

$$= \frac{\sigma_2}{2\epsilon_0} - \frac{\sigma_1}{2\epsilon_0} = \frac{\sigma_2 - \sigma_1}{2\epsilon_0}$$

$$E = \frac{\sigma_2 - \sigma_1}{2\epsilon_0}$$

$$E = \frac{53.1 \cdot 10^9 - 17.7 \cdot 10^9}{2 \cdot 8.85 \cdot 10^{-12}} = 2 \cdot 10^3 \left( \frac{\text{N}}{\text{m}} \right)$$

$$B: E = 2 \cdot 10^3 \frac{\text{N}}{\text{m}}$$



IS. 48.2

$$\mathcal{E} = 2 \text{ В}$$

$$r_1 = 4 \text{ Ом}$$

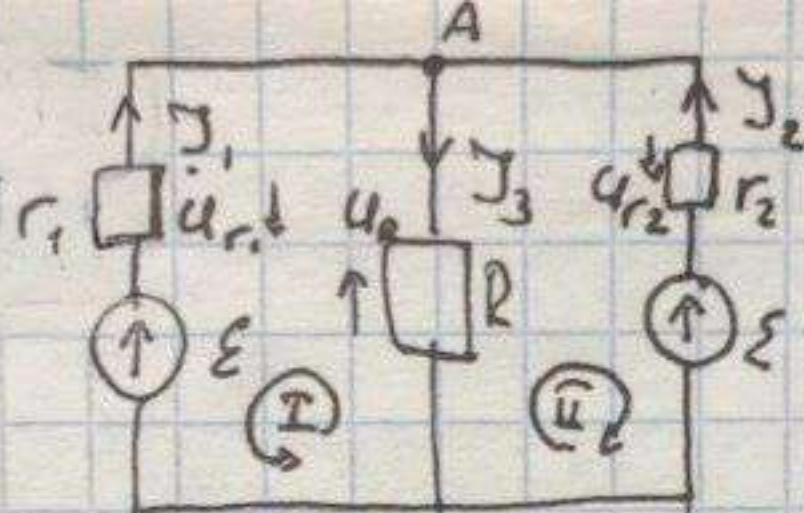
$$r_2 = 2 \text{ Ом}$$

$$I_1 = 1 \text{ А}$$

$$R = ?$$

$$I_2 = ?$$

$$I_3 = ?$$



I зак. Кирхгофа

в узле A  $I_1 + I_2 = I_3$

II зак. Кирхгофа

Ⓘ  $U_R + U_{r_1} - \mathcal{E} = 0$ ,  $U_R = I_3 R$ ,  $U_{r_1} = r_1 I_1$

Ⓜ  $U_R + U_{r_2} - \mathcal{E} = 0$ ,  $U_{r_2} = r_2 I_2$

Решив систему уравнений

отрицательно

$$R = 0,67 \text{ Ом}$$

$$I_2 = 0,5 \text{ А}$$

$$I_3 = 1,5 \text{ А}$$

В:  $R = 0,67 \text{ Ом}$ ;  $I_2 = 0,5 \text{ А}$ ;  $I_3 = 1,5 \text{ А}$ .



$$\begin{cases} I_3 R + r_1 I_1 - \mathcal{E} = 0 \\ I_3 R + r_2 I_2 - \mathcal{E} = 0 \\ I_1 + I_2 = I_3 \end{cases}$$

$$\begin{cases} I_3 R + 1 - 2 = 0 & (1) \\ I_3 R + 2 I_2 - 2 = 0 & (2) \\ 1 + I_2 = I_3 & (3) \end{cases}$$

$$\text{3 (1) } 1 - 2 = 2 I_2 - 2$$

$$\underline{I_2 = \frac{1}{2} \text{ (A)}}$$

$$\text{3 (1) } 1,5 R = 1$$

$$R = \frac{10}{15} = \frac{2}{3} = 0,67 \text{ (Ohm)}$$

$$\text{3 (3) } I_3 = 1 + 0,5 = \underline{1,5 \text{ A}}$$



$$16.24.2. \quad l = 1 \mu \quad 2\pi R = l \Rightarrow R = \frac{l}{2\pi}$$

$$I = 10 A$$

$$B = ?$$

$$P_m = ?$$



$$B = \int dB = \int_0^l \frac{\mu_0 I}{4\pi R^2} dx =$$

$$= \frac{\mu_0 I}{4\pi R^2} \int_0^l dx = \frac{\mu_0 I \cdot l}{4\pi R^2} =$$

$$= \frac{\mu_0 I l}{4\pi \cdot \frac{l^2}{4\pi^2}} = \left[ \frac{\mu_0 I \pi}{l} = B \right] = 1,26 \cdot 10^{-6} \cdot \frac{10 \cdot 3,14}{1} =$$

$$= 39,4 \cdot 10^{-6} (T_n)$$

$$P_m = I \cdot S = I \cdot \pi R^2 = I \cdot \pi \frac{l^2}{4\pi^2} = \left[ \frac{I l^2}{4\pi} = P_m \right]$$

$$P_m = \frac{10 \cdot 1}{4 \cdot 3,14} = 0,8 (A \cdot M^2)$$

$$B: \quad B = 39,4 \text{ мкТн}; \quad P_m = 0,8 \text{ А} \cdot \text{м}^2$$

$$18.25.2 \quad S = 5 \text{ cm}^2$$

$$L = \frac{\mu_0 N^2 S}{l}$$

$$N = 1200$$

$$I = 2 A$$

$$B = \mu_0 \frac{N}{l} \cdot I \Rightarrow \frac{\mu_0 N}{l} = \frac{B}{I}$$

$$B = 10^{-2} T_n$$

$$\left[ L = \frac{B}{I} N S \right] = \frac{10^{-2}}{2} \cdot 5 \cdot 10^{-4} \cdot 1200^2 =$$

$$L = ?$$

$$= 3 \cdot 10^{-3} (H)$$

$$B: \quad L = 3 \cdot 10^{-3} H$$



12.25.2.  $r_{20} - r_2 = 4,8 \cdot 10^{-3} \text{ m}$

$r_{16} - r_3 = ?$

$r_k = \sqrt{\frac{R \lambda}{2} \cdot k}$

$r_{20} - r_2 = \sqrt{\frac{R \lambda}{2}} (\sqrt{20} - \sqrt{2}) \Rightarrow \sqrt{\frac{R \lambda}{2}} = \frac{r_{20} - r_2}{\sqrt{20} - \sqrt{2}}$

$r_{16} - r_3 = \sqrt{\frac{R \lambda}{2}} (\sqrt{16} - \sqrt{3})$

$r_{16} - r_3 = (r_{20} - r_2) \frac{4 - \sqrt{3}}{2\sqrt{5} - \sqrt{2}}$

$= 3,6 \cdot 10^{-3} \text{ m}$

B:  $r_{16} - r_3 = 3,6 \cdot 10^{-3} \text{ m}$