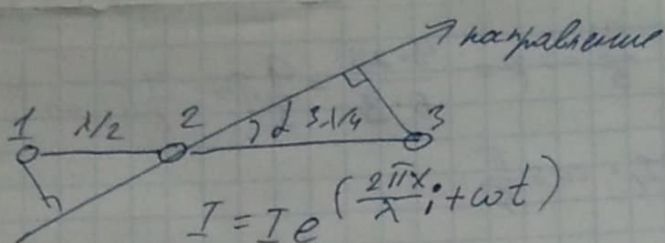


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1



$$I = I e^{(\frac{2\pi x}{\lambda} i + \omega t)}$$

$$I_1 + I_2 + I_3 = 0 \quad i I_1, I_2, I_3 \neq 0$$

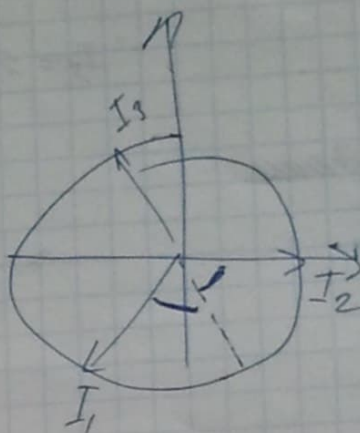
$$-\frac{\lambda/2 \cdot \cos \alpha}{2} + \left(\frac{\lambda}{2} + \lambda n\right) = \frac{3\lambda}{4} \cos \alpha$$

направление противоположно ↑

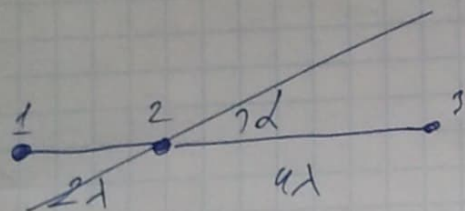
$$\cos \alpha = -\frac{1}{2} - \lambda n$$

$$\cos \alpha = \pm \frac{1}{2} \Rightarrow \text{направление противоположно направлению I_1 и I_2 в точке.}$$

$$\lambda/2 \cdot \frac{1}{2} = \frac{\lambda}{4} \Rightarrow I_3 = I_1 \cdot \sqrt{2}$$



2



направление

$$-\frac{2\lambda \cos \alpha}{2} + \left(\frac{\lambda}{2} + n\lambda\right) = 4\lambda \cos \alpha$$

$$5 \cos \alpha = -\frac{1}{2} - n$$

$$\cos \alpha = \frac{1}{\frac{5}{2} + n} = \frac{2n+1}{10}$$

$$1. \cos \alpha = \pm \frac{1}{10} \Rightarrow \text{направление } 2\lambda \cdot \frac{1}{10} = \frac{\lambda}{5} \Rightarrow \varphi = \frac{2\pi}{5} = \frac{\pi}{3} \Rightarrow$$

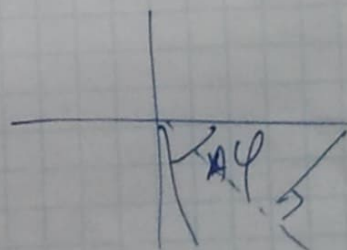
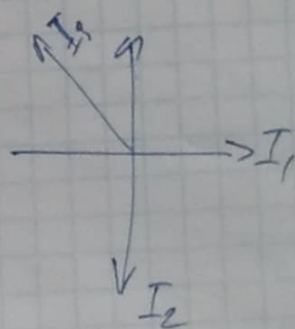
$$I_3 = 2I_1 \cdot \cos \frac{\pi}{5}$$

$$2. \cos \alpha = \pm \frac{3}{10} \Rightarrow 2\lambda \cdot \frac{3}{10} = \frac{3\lambda}{5} \Rightarrow \varphi = \frac{2\pi \cdot 3}{5 \cdot 2} = \frac{3\pi}{5} \Rightarrow$$

$$\Rightarrow I_3 = 2I_1 \cos \frac{3\pi}{5} \text{ направление противоположно.}$$

$$3. \cos \alpha = \pm \frac{5}{10} \Rightarrow 2\lambda \cdot \frac{1}{2} = \lambda \Rightarrow \varphi = 2\pi \Rightarrow I_3 = 2I_1$$

$$4. \cos \alpha = \pm \frac{7}{10} \Rightarrow 2\lambda \cdot \frac{7}{10} = \frac{7\lambda}{5} \Rightarrow \varphi = \frac{2}{5} \cdot 2\pi = \frac{4\pi}{5} \Rightarrow I_3 = 2I_1 \cos \frac{4\pi}{5}$$



$$5 \cdot \cos \alpha = \pm \frac{9}{10} \Rightarrow 2\lambda \cdot \frac{9}{10} = \frac{9\lambda}{5} \Rightarrow \varphi = \frac{9 \cdot 2\pi}{5 \cdot 2} = \frac{9}{5}\pi = \frac{4}{5}\pi \Rightarrow$$

$$\Rightarrow I_3 = 2I_1 \cdot \cos \frac{\pi}{5}.$$

Направления

