

سوال ۱

$$\frac{a \sin \frac{\pi}{4} + b \cos \frac{\pi}{4}}{a \sin \frac{11\pi}{4} + b \cos \frac{\pi}{4}} = \tan \frac{\pi}{4}$$

$$\frac{a \sin(\pi + \frac{\pi}{4}) + b \cos(\pi + \frac{\pi}{4})}{a \sin(\pi - \frac{\pi}{4}) + b \cos \frac{\pi}{4}} = \tan(\pi - \frac{\pi}{4})$$

$$\frac{-a \sin \frac{\pi}{4} - b \cos \frac{\pi}{4}}{a \sin \frac{\pi}{4} + b \cos \frac{\pi}{4}}$$

$$\frac{-\frac{\sqrt{2}}{2}a - \frac{\sqrt{2}}{2}b}{\frac{\sqrt{2}}{2}a + \frac{\sqrt{2}}{2}b} = -\frac{\sqrt{2}}{2}$$

$$\frac{-\frac{\sqrt{2}}{2}a - \frac{\sqrt{2}}{2}b}{-\frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}}b} = -\frac{\sqrt{2}}{2}$$

$$-\frac{\sqrt{2}}{2}a - \frac{\sqrt{2}}{2}b = \frac{1}{\sqrt{2}}a - \frac{1}{\sqrt{2}}b$$

$$-2a = b$$

$$\frac{b}{a} = -\frac{2a}{a} = (-2)$$

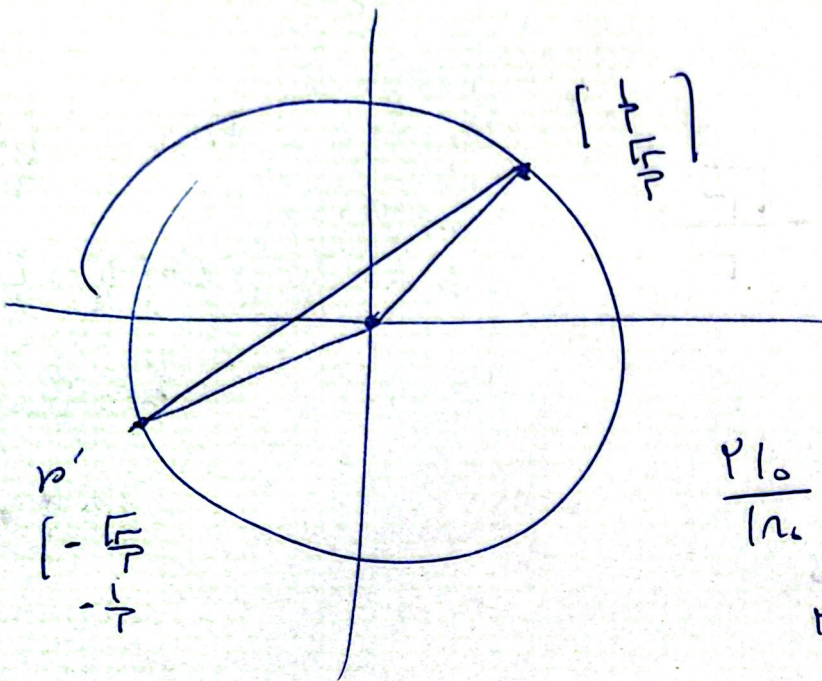
$$\sin \frac{\pi}{4} = \frac{\sqrt{2}}{2}$$

$$\cos \frac{\pi}{4} = \frac{\sqrt{2}}{2}$$

$$\cos \frac{\pi}{4} = \frac{1}{\sqrt{2}}$$

فانکشن
د اړیکه سره تړلی

سوال ۲



$$\frac{r_1}{n_1} = \frac{r_2}{n_2}$$

$$\frac{r_1 \sin \theta_1}{n_1} = \frac{r_2 \sin \theta_2}{n_2}$$

$$\sqrt{\left(\frac{1}{2} + \frac{\sqrt{2}}{2}\right)^2 + \left(\frac{\sqrt{2}}{2} + \frac{1}{2}\right)^2}$$

$$\sqrt{r^2 \left(1 + \frac{\sqrt{2}}{2}\right)^2} = \sqrt{r^2} \cdot \frac{1 + \sqrt{2}}{2} = \frac{\sqrt{2} + \sqrt{2}}{2} r$$

$$\frac{v}{n} = \frac{c}{n} \Rightarrow \frac{1}{n} = \frac{v}{c} \Rightarrow v = c$$

$$v \propto \frac{1}{n} (= \frac{1}{r})$$

$$r: r$$

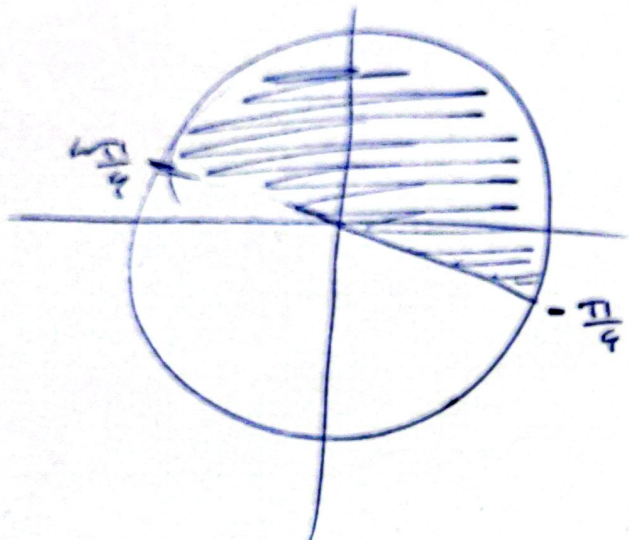
سوال ۴

$$\left| \frac{11M}{P} - \omega H \right| = r_0 \rightarrow \frac{11M}{P} - \omega H = \pm r_0$$

$$\frac{11M}{P} - r_0 = H_0 \rightarrow \frac{11M}{P} = H_0 \rightarrow \omega = H_0 \text{ درصدا بار}$$

$$\frac{11M}{P} - r_0 = -r_0 \rightarrow \frac{11M}{P} = r_0 \rightarrow \omega = \frac{L \epsilon_0}{1.1}$$

سوال ۴



$$\max \sin = 1$$

$$\min \sin = -\frac{1}{\sqrt{2}}$$

$$\frac{m - \sqrt{2}}{2} = 1 \rightarrow m - \sqrt{2} = 2 \rightarrow m = 2 + \sqrt{2}$$

$$\frac{m - \sqrt{2}}{2} = -\frac{1}{\sqrt{2}} \rightarrow \frac{m - \sqrt{2}}{2} = -\frac{1}{\sqrt{2}} \rightarrow m - \sqrt{2} = -\sqrt{2} \rightarrow m = 0$$

$$m = \frac{1}{\sqrt{2}}$$

$$\frac{1}{\sqrt{2}} < m < 1$$

$$\rightarrow (1, \frac{1}{\sqrt{2}}), (\frac{1}{\sqrt{2}}, 1), (\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}), (\frac{1}{\sqrt{2}}, 0), (0, \frac{1}{\sqrt{2}}), (0, 0), (1, 0), (0, 1)$$

۷ نمره

$$\frac{\sin(1.4) + k \cos(1.4)}{\cos(1.4) + r \sin(1.4)} = r$$

$$\frac{\sin(\theta_1 + \phi) + k \cos(\theta_2 - \phi)}{\cos(\theta_2 - \phi) + r \sin(\theta_1 + \phi)} = r$$

$$\frac{\frac{\cos \theta}{\cos \theta} + \frac{-k \sin \theta}{\cos \theta}}{\frac{-\cos \theta}{\cos \theta} - \frac{\tau \sin \theta}{\cos \theta}} = \tau$$

$$\frac{1 - k \tan \alpha}{-1 - r \tan \alpha} = r \rightarrow 1 - k \tan \alpha = -r + r \tan \alpha$$

$$(4-k) \frac{1}{k} = -8 \rightarrow 4-k = -19 \rightarrow -k = -23$$

$$k = 23$$

$$\frac{\tan\left(\frac{\pi}{2} - \alpha\right) - \cot(\pi - \alpha)}{\cot\left(\frac{\pi}{2} - \alpha\right) + r \tan(\pi - \alpha)} =$$

$$\frac{\cot \alpha + \cot \alpha}{\tan \alpha - r \tan \alpha}$$

$$\frac{\frac{1}{r\sqrt{r}} + \frac{1}{r\sqrt{r}}}{r\sqrt{r} - r\sqrt{r}} = \frac{\frac{1}{\sqrt{r}}}{-\sqrt{r}} = \left(-\frac{1}{r}\right)$$

$$\begin{aligned}\tan &= r\sqrt{r} \\ \cot &= \frac{1}{r\sqrt{r}}\end{aligned}$$

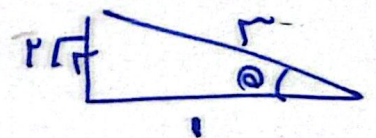
(Solved)

$$\frac{1 - \cos}{1 + \cos} = r$$

$$1 - \cos = r + r \cos$$

$$r \cos = -1$$

$$\cos = -\frac{1}{r}$$



$$\sin = \frac{r\sqrt{r}}{r}$$

+ r cos = -1

$$\frac{I_{oA}}{I_{oB}} = \frac{\pi}{\pi} \rightarrow \pi = \frac{I_{oA} \tau_1}{I_{oB}} \rightarrow \sqrt{\frac{\pi}{\pi}}$$

$$R_A \propto \sqrt{\frac{I_{oA}}{I_{oB}}} = R_B \propto \frac{A \tau_1}{I_{oB}}$$

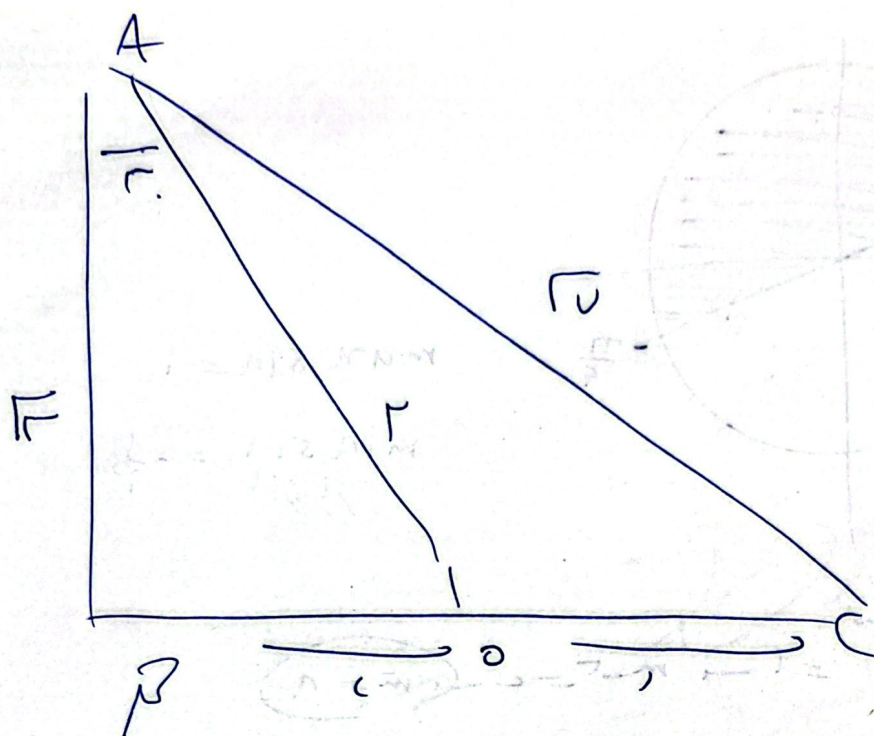
$$\frac{R_A}{R_B} = \frac{\frac{A \tau_1}{I_{oB}}}{\sqrt{\frac{I_{oA}}{I_{oB}}}} = \sqrt{\frac{A}{I_{oB}}}$$

$$\frac{A_A}{A_B} = \left(\sqrt{\frac{A}{I_{oB}}}\right)^2 = \left(\frac{A}{I_{oB}}\right)$$

Sub

$$I_A = I_B$$

$$R_A \propto R_B \propto \frac{A \tau_1}{I_{oB}}$$



(9W2)

$$AP + PC = AC$$

$$AP = \epsilon \quad PC = \delta \quad \rightarrow AP + PC = AC$$

$$AC = \epsilon + \delta$$

$$BC = \sigma$$

$$AC = AP + PC = \epsilon + \delta$$

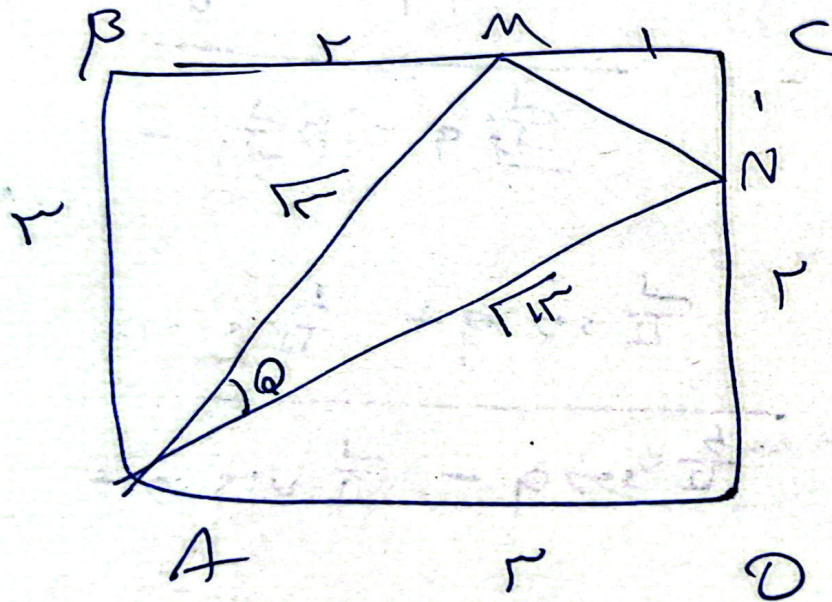
$$AC = \sigma$$

$$\sin C = \frac{\sigma}{\tau} \quad \cos C = \frac{\rho}{\tau}$$

$$\sin^2 C = \frac{\sigma^2}{\tau^2} \quad \cos^2 C = \frac{\rho^2}{\tau^2}$$

$$\rho^2 = \tau^2 - \sigma^2 \quad \rho = \sqrt{\tau^2 - \sigma^2}$$

(1. جلد)



$$AM = \sqrt{r^2 + 1} = \sqrt{r}$$

$$AN = \sqrt{r^2 + 1} = \sqrt{r}$$

$$\frac{1}{r} \times \frac{1}{r} \times \sin \theta = \frac{1}{r}$$

$$\sin \theta = \frac{1}{r}$$

$$\cos \angle AON = \frac{\frac{1}{r} \times r}{1} = \frac{1}{r}$$

$$\cos \angle BMA = \frac{r \times r}{1} = \frac{1}{r}$$

$$\cos \angle MCN = \frac{1 \times 1}{r} = \frac{1}{r}$$

$$\cos \theta =$$

$$r \times r \neq 1$$

$$\cos \angle AMN = \frac{r \times r}{1} = \frac{1}{r}$$