

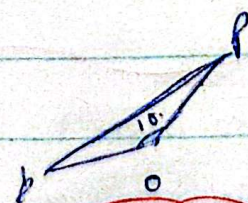
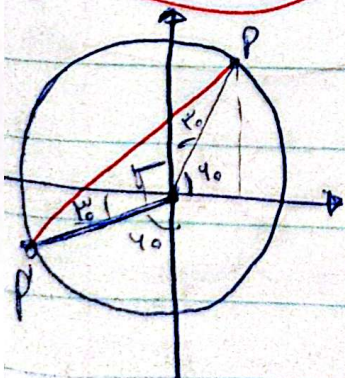
$$\frac{a \sin \frac{\pi}{4} + b \cos \frac{\pi}{4}}{a \sin \frac{3\pi}{4} + b \cos \frac{3\pi}{4}} = \tan \frac{\pi}{4}$$

سوال ۱

$$\frac{-\frac{\sqrt{3}}{2}a - \frac{1}{2}b}{\frac{1}{2}a + \frac{\sqrt{3}}{2}b} = -\frac{\sqrt{3}}{1} = \frac{-\sqrt{3}(a+b)}{\frac{1}{2}(b-a)} = \frac{-2\sqrt{3}}{1}$$

$$\frac{(a+b)}{(b-a)} = \frac{1}{\sqrt{3}} \quad \begin{aligned} \sqrt{3}a + \sqrt{3}b &= b - a \\ \sqrt{3}a &= -\sqrt{3}b \rightarrow b = -a \end{aligned}$$

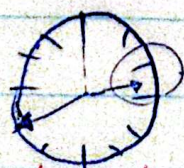
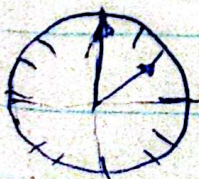
$$\frac{-\sqrt{3}a}{a} = \boxed{-\sqrt{3}}$$



$$PP' = \sqrt{1+1-2\cos 10^\circ} = \sqrt{2-2\cos 10^\circ}$$

$$POPP' = r + \sqrt{r} + \sqrt{r}$$

$$\frac{\pi}{a} \times \frac{180^\circ}{\pi} = (2^\circ) \rightarrow \text{angle} \rightarrow \epsilon'$$



$$\boxed{2^\circ \epsilon'}$$

$$\left| \frac{11M}{r} - 9.4 \right| = 2.0$$

سوال 3

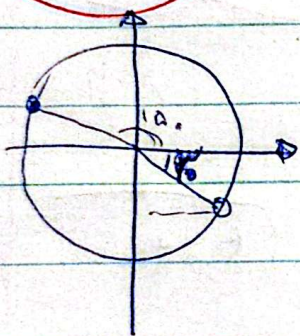
$$\left| \frac{11M}{r} - 9.4 \right| = 2.0$$

$$\frac{11M}{r} - 9.4 = 2.0 \rightarrow M = 2.1$$

$$\frac{11M}{r} - 9.4 = -2.0 \rightarrow M = \frac{12.4}{11} = 1.1$$

$$M = 2.1$$

پایان



$$-\frac{1}{r} < \sin \alpha < 1$$

$$-\frac{1}{r} < \frac{m-3}{a} < 1 \rightarrow -\frac{a}{r} < m-3 < a$$

$$\frac{1}{r} < m < 1 \rightarrow$$

$$m < 1$$



سوال 4

$$\frac{\sin(\alpha_0 + \alpha) + K \cos(\alpha_0 - \alpha)}{\cos(\alpha_0 - \alpha) + r \sin(\alpha_0 + \alpha)} = \frac{\sin \alpha + K \cos \alpha}{\cos \alpha - r \sin \alpha}$$

$$\sin(\alpha_0 + \alpha) + K \cos(\alpha_0 - \alpha) = \sin \alpha + K \cos \alpha$$

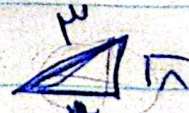
$$\frac{\sin \alpha}{\cos \alpha} = \frac{r}{1-r} = \frac{1}{2}$$

$$\frac{r-1}{-r-1} = 2 \rightarrow$$

$$\frac{r-1}{-r-1} = 2 \rightarrow K = 2.4$$

$$1. \log m = r + K \log m \rightarrow \log m = -\frac{1}{r}$$

$$\sin m = \frac{\sqrt{1-r}}{r}$$



$$\frac{\cos m + \cos m}{\tan m + r \tan m} = \frac{r \cos m}{- \tan m}$$

$$\tan m = r \tan m$$

$$= \frac{-\frac{r}{\sqrt{1-r}}}{1-\frac{r}{1-r}} = \frac{1}{2}$$

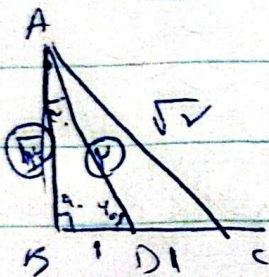
سوال 5

$$\frac{10 \angle \pi}{1 \angle 0} \Rightarrow \frac{4 \angle \pi}{10}$$

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$$\alpha R = \alpha R \Rightarrow \frac{4 \angle \pi}{1} R_A = \frac{4 \angle \pi}{1} R_B \Rightarrow \frac{R_A}{R_B} = \frac{4}{4}$$

$$\frac{S_A}{S_B} = \frac{9}{\Sigma}$$



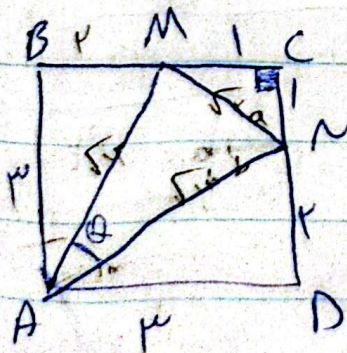
$$\sqrt{4} = S_{AB} = \frac{\sqrt{4} \times BC}{4} = \sqrt{4}$$

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$$BC = 4 \rightarrow DC = 1 \quad AC = \sqrt{1+4}$$

$$= \sqrt{5}$$

$$S_{ADC} = 4 S_{ADC} \Rightarrow 4 \times \frac{4}{\sqrt{5}} \times \frac{\sqrt{4}}{\sqrt{5}} = \frac{16}{5}$$



$$MN = \sqrt{1+1} = \sqrt{2}$$

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$$AM = AN = \sqrt{(4)^2 + (4)^2} = \sqrt{32}$$

$$(\sqrt{32})^2 = (\sqrt{10})^2 + (\sqrt{10})^2 - 2(\sqrt{10})(\sqrt{10}) \cos \theta \rightarrow \cos \theta = \frac{1}{2}$$

$$4 = 4 + 4 - 8 \cos \theta \rightarrow \cos \theta = \frac{1}{2} \Rightarrow \theta = 60^\circ$$

$$\sin \theta = 1 - \cos \theta = 1 - \left(\frac{1}{2}\right) = \frac{1}{2} \Rightarrow \sin \theta = \frac{1}{2}$$