

$$\begin{aligned} \text{a) } \tan \frac{11\pi}{9} + \sin \frac{14\pi}{9} \times \cos \frac{13\pi}{9} &\Rightarrow \frac{11\pi}{9} - \pi = \frac{2\pi}{9} \Rightarrow -1 / \frac{14\pi}{9} = \frac{2\pi}{9} \\ \pi &= \frac{13\pi}{9} \rightarrow \frac{\sqrt{3}}{2} / \frac{11\pi}{9} - \pi = \frac{\pi}{9} \Rightarrow \frac{\sqrt{3}}{2} / \frac{\pi}{9} \\ \sin & \\ -1 + \frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2} &= -1 + \frac{3}{4} = -\frac{1}{4} \checkmark \end{aligned}$$

$$\frac{2\cos\alpha - \sin\alpha}{\cos\alpha + \sin\alpha} = \frac{\frac{2}{\sqrt{2}} - \frac{1}{\sqrt{2}}}{\frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}}} = \frac{\frac{1}{\sqrt{2}}}{\frac{2}{\sqrt{2}}} = \frac{1}{2} = 1/2 \checkmark$$

$$c + \alpha = \pi \Rightarrow \frac{1}{\sqrt{2}} \Rightarrow \frac{1}{\sqrt{2}} = \sin\alpha \Rightarrow \alpha = \frac{\pi}{4} \Rightarrow \cos\alpha = \frac{1}{\sqrt{2}}$$

$$\begin{aligned} \sin\alpha = 2\cos\alpha &\Rightarrow \frac{\sin\alpha}{\cos\alpha} = \tan\alpha = 2 = \frac{\text{قطر}}{\text{مجاور}} \\ \cos\alpha &= \frac{\text{مجاور}}{\text{وتر}} = \frac{1}{\sqrt{5}} \Rightarrow \frac{1}{\sqrt{5}} \end{aligned}$$

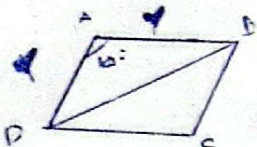
$$\begin{aligned} \text{b) } \sin\alpha = \frac{\sqrt{3}}{2} &\Rightarrow \sin\alpha = \frac{1}{2} \Rightarrow 1 - \sin\alpha = \frac{1}{2} \Rightarrow \cos\alpha = -\frac{\sqrt{3}}{2} = -\frac{\sqrt{3}}{2} \\ \cos\left(\frac{11\pi}{6}\right) &= \cos\left(\frac{2\pi}{3}\right) = -\frac{1}{2} \left\{ \sin\left(\frac{11\pi}{6}\right) = \sin\left(\frac{5\pi}{6}\right) = \frac{1}{2} \right\} \cos(x+y) = \cos x \cos y - \sin x \sin y \\ \Rightarrow \cos\left(\frac{11\pi}{6} + \alpha\right) &= \left(-\frac{1}{2}\right) \times \left(-\frac{\sqrt{3}}{2}\right) - \left(\frac{1}{2}\right) \times \left(\frac{\sqrt{3}}{2}\right) = \frac{\sqrt{3}}{4} - \frac{\sqrt{3}}{4} = 0 \checkmark \end{aligned}$$

$$\begin{aligned} \text{c) } \tan\alpha = \frac{1}{\sqrt{3}} &\Rightarrow \sin\alpha = \frac{1}{2}, \cos\alpha = \frac{\sqrt{3}}{2} \Rightarrow \sin\left(\frac{\pi}{6}\right) = \frac{1}{2}, \cos\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2} \\ \Rightarrow \sin\left(\frac{\pi}{6} + \alpha\right) &= \sin\left(\frac{\pi}{6}\right)\cos\alpha + \cos\left(\frac{\pi}{6}\right)\sin\alpha = \frac{1}{2} \times \frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2} \times \frac{1}{2} = \frac{\sqrt{3}}{2} \end{aligned}$$

$$\begin{cases} 2\sin^2\alpha + \cos^2\alpha = \frac{5}{4} \\ \cos^2\alpha + \sin^2\alpha = 1 \Rightarrow \cos^2\alpha = 1 - \sin^2\alpha \end{cases} \Rightarrow \sin^2\alpha + 1 - \sin^2\alpha = \frac{5}{4} \Rightarrow \sin^2\alpha = \frac{1}{4} \Rightarrow \sin\alpha = \frac{1}{2}$$

$$\frac{1}{2} + \cos^2\alpha = \frac{5}{4} \Rightarrow \cos^2\alpha = \frac{3}{4} \Rightarrow \cos\alpha = \frac{\sqrt{3}}{2} \Rightarrow \tan\alpha = \frac{\sin\alpha}{\cos\alpha} = \frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}} = \frac{1}{\sqrt{3}} \checkmark$$

فصله میرزا ۱۸. $\Rightarrow \frac{12.}{6.} = 2$ ✓

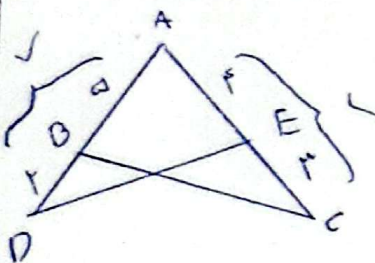


$$S_{\square} = AD \times AP \times \sin \alpha \Rightarrow \sin \alpha = \frac{1}{r} \Rightarrow$$

$$AB \times A\emptyset = I \cdot A$$

$$\frac{AD}{AD} = \frac{1}{1} \Rightarrow 1$$

$$\frac{AD}{AO} = \frac{1}{r} \Rightarrow \frac{1.1}{5} = 1 \Rightarrow \sqrt{1.1} = \sqrt{r} \Rightarrow$$

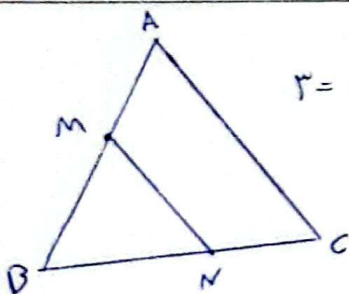


$$S_{DABC} - S_{DAPE} = 1/V_0$$

$$S_{DABC} > S_{DAPE}$$

$$\frac{r \sin \alpha}{r} - \frac{r \sin \alpha}{r} = 1/\alpha \Rightarrow \frac{r \sin \alpha - r \sin \alpha}{r} = 1/\alpha \Rightarrow \sin \alpha = \frac{1}{r}$$

$$\Rightarrow A = 1^\circ \quad \tan r = \frac{1}{\sqrt{r}} \quad \checkmark$$



$$r = \frac{\frac{SD}{ABC} = \frac{AB \times BC \times \sin B}{x}}{\frac{SD}{BMN} = \frac{BM \times BN \times \sin \theta}{x}}$$

$$\frac{AB \times \frac{a}{r} \cancel{BN}}{BM \times \cancel{BN}} = r \Rightarrow \frac{AB}{BM} = \frac{r}{a}$$

$$\begin{aligned} \angle B N &= \angle N C \Rightarrow N C = \frac{r}{r} B N \\ \Rightarrow B C &= \frac{a}{r} B N \end{aligned}$$

$$\frac{BM}{AM} = \frac{B}{A} \quad \checkmark$$

$$\frac{|\sin x|}{\cos x} = - \frac{1}{\frac{\cos x}{\sin x}} \Rightarrow$$

$$\frac{|\sin \alpha|}{\cos \alpha} = \frac{-\sin \alpha}{\cos \alpha} \Rightarrow \sin \alpha < 0$$

$$\frac{-|\cos \alpha|}{\cos \alpha} \times \cancel{\sin \alpha} = \cancel{\sin \alpha} \Rightarrow \frac{|\cos \alpha|}{\cos \alpha} = -1 \Rightarrow \cos \alpha < 0$$

$$\frac{1}{\sqrt{\cos^2 \alpha}} - \frac{\tan \alpha}{\frac{\sin \alpha}{\cos \alpha}} = \frac{1 + \sin \alpha}{|\cos \alpha|} \Rightarrow \cancel{x} - \frac{\sin \alpha \times |\cos \alpha|}{\cos \alpha} = 1 + \sin \alpha \Rightarrow$$

ب) $\tan(\cancel{\pi} - \frac{\pi}{4}) \sin(\cancel{\pi} - \frac{\pi}{r}) + \cos(\cancel{\pi} + \frac{\pi}{r}) = 0$

$$-\tan \frac{\pi}{4} = -\frac{\sqrt{r}}{r} \quad -\sin \frac{\pi}{r} = -\frac{\sqrt{r}}{r} \quad -\cos \frac{\pi}{r} = -\frac{1}{r}$$

ب) $1 + \frac{\cancel{\tan} \alpha}{\frac{1}{\sqrt{9}}} = \frac{1}{\cos \alpha} \xrightarrow{\text{دالة}} \cos \alpha = \frac{\sqrt{r}}{1} \xrightarrow{\sin \alpha + \cos \alpha = 1} \sin \alpha = \frac{\sqrt{r}}{10}$

$\sin(\frac{13\pi}{f} + \alpha) = \sin(\pi + \frac{\pi}{f} + \alpha) = -\sin(\frac{\pi}{f} + \alpha) \xrightarrow[\text{الف}]{\text{مشتق}} -\frac{f}{\omega}$