

الف) $\tan \frac{11\pi}{4} + \sin \frac{15\pi}{4} \cos \frac{13\pi}{4} =$ سؤال 1:

$$\tan\left(2\pi + \frac{3\pi}{4}\right) + \sin\left(\frac{3\pi}{4} + \frac{\pi}{4}\right) \times \cos\left(3\pi + \frac{\pi}{4}\right) = -1 + \frac{\sqrt{2}}{2} = \frac{-2 + \sqrt{2}}{2}$$

$\tan 135^\circ \times \sin 45^\circ \times \cos 315^\circ$

ب) $\tan \frac{14\pi}{9} \sin \frac{11\pi}{3} + \cos \frac{10\pi}{3} =$

$$\tan\left(2\pi + \frac{2\pi}{9}\right) \times \sin\left(3\pi + \frac{2\pi}{3}\right) + \cos\left(2\pi + \frac{2\pi}{3}\right) = \frac{-\sqrt{3}}{3} \times \frac{-\sqrt{3}}{2} - \frac{1}{2} = \frac{3}{6} - \frac{1}{2} = 0$$

$\tan 150^\circ \times \sin 300^\circ + \cos 240^\circ$

$$\frac{3\cos x - \sin x}{\cos x + \sin x} = \frac{3 \times \frac{4}{5} - \frac{1}{5}}{\frac{4}{5} + \frac{1}{5}} = \frac{\frac{11}{5}}{\frac{5}{5}} = \frac{11}{5}$$

سؤال 2: $\cot x = \frac{4}{1}$



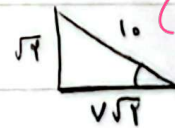
$\sin \alpha = 2 \cos \alpha$ (ربع سن) $\cos \alpha = ?$

سؤال 3: $\cos \alpha = ?$

$$\tan \alpha = 2 \rightarrow 1 + \tan^2 \alpha = \frac{1}{\cos^2 \alpha} \Rightarrow 1 + 4 = 5 \rightarrow \cos^2 \alpha = \frac{1}{5} \rightarrow \cos \alpha = -\frac{\sqrt{5}}{5}$$

الف) $\cos\left(\frac{\pi}{4} + \frac{\pi}{4} + \alpha\right) = \cos\left(\frac{\pi}{2} + \alpha\right) =$

$$= \cos \frac{\pi}{4} + \cos \alpha \rightarrow \frac{-\sqrt{2}}{2} - \frac{-\sqrt{2}}{10} = \frac{-4\sqrt{2}}{10}$$



سؤال 4: $\cos \alpha = -\frac{\sqrt{2}}{10}$

ب) $\sin\left(\frac{13\pi}{4} + \alpha\right) = \sin\left(3\pi + \frac{\pi}{4} + \alpha\right) = \sin\left(\frac{5\pi}{4} + \alpha\right) = \sin \frac{5\pi}{4} + \sin \alpha$

$$= \frac{-\sqrt{2}}{2} + \frac{\sqrt{2}}{10} = \frac{-4\sqrt{2}}{10}$$

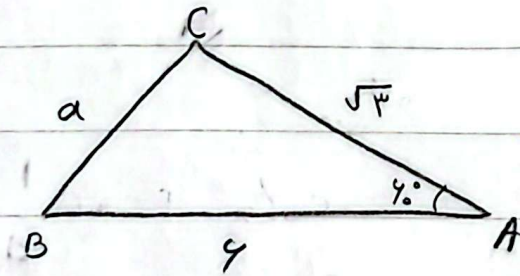
$$\Rightarrow \sin \alpha = \frac{1}{5\sqrt{2}} = \frac{\sqrt{2}}{10}$$

$$= \frac{-4\sqrt{2}}{10}$$

$$r \sin^2 \theta + \cos^2 \theta = \frac{r}{p} \rightarrow r \sin^2 \theta = \frac{r}{p} - \cos^2 \theta \quad \tan^2 \theta = \frac{p}{r} - 1 \quad \text{سؤال ٤}$$

$$r(1 - \cos^2 \theta) = \frac{r}{p} - \cos^2 \theta \rightarrow r - r \cos^2 \theta = \frac{r}{p} - \cos^2 \theta \rightarrow \frac{r}{p} = \cos^2 \theta$$

$$\rightarrow 1 + \tan^2 \theta = \frac{1}{\cos^2 \theta} \rightarrow \tan^2 \theta = \frac{1}{\cos^2 \theta} - 1 \rightarrow \boxed{\tan^2 \theta = \frac{1}{p}} \quad \text{✓}$$



$$\sqrt{3} \times 4 \times \frac{1}{4} \times \sin A = F, \Delta$$

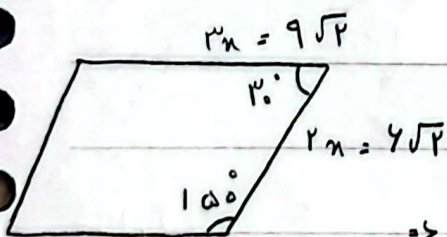
سؤال ٤

$$3\sqrt{3} \times \sin A = F, \Delta \rightarrow \sin A = \frac{r}{3\sqrt{3}} = \frac{\sqrt{3}}{3}$$

$$\sin A = \frac{\sqrt{3}}{3} \rightarrow \hat{A} = 40^\circ \text{ min}$$

$$\hat{A} = 140^\circ \text{ max} \quad \text{✓}$$

$$\frac{\text{max}}{\text{min}} = \frac{140}{40} = 3.5$$

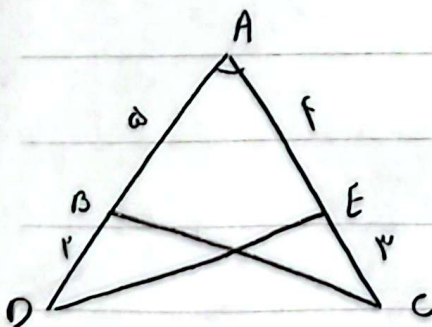


$$S = r_1, r_2 \cdot \sin 150 = 4\sqrt{2} \times \frac{1}{2} = 2\sqrt{2}$$

سؤال ٥

$$r_1^2 = 54 \rightarrow r_1 = 3\sqrt{2}$$

$$\rightarrow P = 2(9\sqrt{2} + 4\sqrt{2}) = 26\sqrt{2} \quad \text{✓}$$



$$S_{ABC} - S_{ADE} = 1, \text{VA}$$

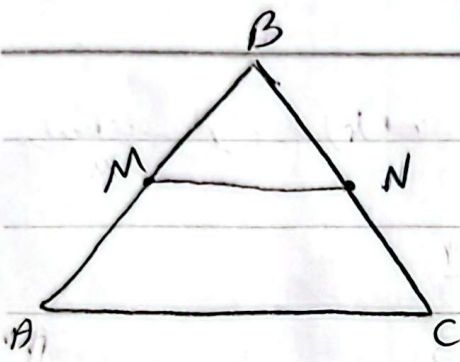
سؤال ٦

$$\left(\frac{1}{2} \times 5 \times 6 \times \sin A\right) - \left(\frac{1}{2} \times 3 \times 4 \times \sin A\right) = 1, \text{VA}$$

$$\frac{15}{2} \sin A - \frac{12}{2} \sin A = \frac{1}{2} \rightarrow \frac{3}{2} \sin A = \frac{1}{2} \rightarrow \boxed{\sin A = \frac{1}{3}}$$

$$\hat{A} = 30^\circ \rightarrow \tan 30 = \frac{\sqrt{3}}{3} \quad \text{✓}$$

Date:



$$\frac{1}{p} \overline{BN} = \frac{1}{p} \overline{NC}$$

$$BN = \frac{p}{r} NC$$

سؤال 9:

$$S_{ABC} = p S_{AMN} \rightarrow p \times \frac{1}{p} \times \overline{BM} \times \overline{BN} \times \sin B = \frac{1}{p} \times \overline{AB} \times \overline{BC} \times \sin B$$

$$p \times \overline{BM} \times \overline{BN} = (\overline{AM} + \overline{MB}) \overline{BC} \rightarrow p \overline{BM} = \overline{AM} + \overline{MB}$$

$$p \overline{BM} = \overline{AM}$$

$$\overline{BM} = \frac{\overline{AM}}{p} \rightarrow \frac{\overline{BM}}{\overline{AM}} = \frac{\overline{AM}}{\overline{AM}} = \frac{1}{p}$$

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

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

$$\frac{|\sin \alpha|}{\cos \alpha} = \frac{-1}{\cot \alpha} \rightarrow \boxed{\sin < 0}$$

$$\downarrow$$

$$\frac{-\sin}{\cos}$$

نامی سوم

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4- ايف

$$\cos^2 \alpha = 1 - \sin^2 \alpha \rightarrow \cos \alpha = 1 - \left(\frac{\sqrt{r}}{1}\right)^2 = 1 - \frac{r}{1} = \frac{1-r}{1} \xrightarrow{\substack{r < 1 \\ \cos \alpha < 0}} \cos \alpha = -\frac{\sqrt{r}}{1}$$

$$\cos\left(\frac{11\pi}{6} + \alpha\right) = \cos\left(\pi - \frac{\pi}{6} + \alpha\right) = -\cos\left(\alpha - \frac{\pi}{6}\right)$$

$$-\left(\frac{\sqrt{r}}{1} \times \cos \alpha + \frac{\sqrt{r}}{1} \sin \alpha\right) = -\frac{\sqrt{r}}{1} \left(-\frac{\sqrt{r}}{1} + \frac{\sqrt{r}}{1}\right) = -\frac{1}{\cancel{\sqrt{r}}} \times -\frac{\cancel{r}\sqrt{r}}{1} = \boxed{\frac{r}{1}}$$

4- ب

$$\tan \alpha = \frac{1}{\sqrt{r}} \rightarrow 1 + \tan^2 \alpha = \frac{1}{\cos^2 \alpha} \rightarrow 1 + \frac{1}{r} = \frac{1}{\cos^2 \alpha}$$

$$\cos^2 \alpha = \frac{r}{1} \xrightarrow{\substack{r < 1 \\ \cos \alpha < 0}} \cos \alpha = \frac{\sqrt{r}}{1} \times \frac{\sqrt{r}}{\sqrt{r}} = \frac{\sqrt{r}}{1}$$

$$\sin^2 \alpha = 1 - \frac{r}{1} = \frac{1-r}{1} \xrightarrow{\substack{r < 1 \\ \sin \alpha > 0}} \sin \alpha = \frac{1}{\sqrt{r}} \times \frac{\sqrt{r}}{\sqrt{r}} = \frac{\sqrt{r}}{1}$$

$$\sin\left(\pi + \frac{\pi}{6} + \alpha\right) = -\sin\left(\frac{\pi}{6} + \alpha\right) = -\left(\frac{\sqrt{r}}{1} \cos \alpha + \frac{\sqrt{r}}{1} \sin \alpha\right)$$

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