

پست آزمائی
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①

الف) $\tan \frac{11\pi}{4} + \sin \frac{13\pi}{4} \cos \frac{13\pi}{4}$

$\tan(\pi + \frac{3\pi}{4}) + \sin(\pi + \frac{3\pi}{4}) \cos(\pi + \frac{3\pi}{4})$

$\tan(\frac{3\pi}{4}) + \sin(\frac{3\pi}{4}) \cos(\frac{\pi}{4})$

$-\frac{1}{\sqrt{2}} + \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} = -\frac{1}{2} + \frac{1}{2} = 0$

ب) $\tan \frac{17\pi}{4} \sin \frac{11\pi}{4} + \cos \frac{10\pi}{4}$

$\tan(\pi + \frac{5\pi}{4}) \sin(\pi + \frac{3\pi}{4}) + \cos(\pi + \frac{2\pi}{4})$

$\tan(\frac{5\pi}{4}) \sin(\frac{3\pi}{4}) + \cos(\frac{\pi}{2})$

$\frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} + 0 = \frac{2}{4} = \frac{1}{2}$

$\frac{\cos - \sin}{\cos + \sin} = \frac{x(1) - 1}{x + 1} = \frac{11}{5}$

$\cot \frac{\cos}{\sin} \rightarrow \begin{cases} \sin \rightarrow 1 \\ \cos \rightarrow x \end{cases}$

$$\sin \alpha = \cos \alpha \rightarrow \cos \alpha = \sin \alpha$$

$$\sin^2 \alpha + \cos^2 \alpha = 1 \rightarrow \cos^2 \alpha + \cos^2 \alpha = 1 \rightarrow 2\cos^2 \alpha = 1$$

$$\cos^2 \alpha = \frac{1}{2}$$

$$\cos \alpha = \pm \frac{1}{\sqrt{2}} \rightarrow \boxed{\frac{1}{\sqrt{2}}}$$

الف) $\cos\left(\frac{11\pi}{4} + \alpha\right) \rightarrow \cos\frac{11\pi}{4} \cos\alpha - \sin\frac{11\pi}{4} \sin\alpha$

$$\sin\left(\frac{11\pi}{4} + \alpha\right) \rightarrow \sin\frac{11\pi}{4} \cos\alpha + \cos\frac{11\pi}{4} \sin\alpha$$

$$\sin \alpha = \frac{\sqrt{2}}{10}$$

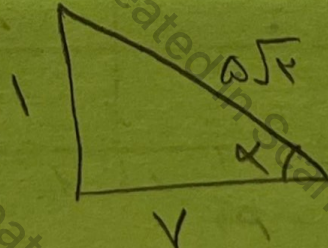
$$\cos^2 \alpha = 1 - \sin^2 \alpha = 1 - \frac{2}{100} = \frac{98}{100} \rightarrow \cos \alpha = \pm \frac{\sqrt{98}}{10} = \pm \frac{7\sqrt{2}}{10}$$

$$\Rightarrow -\frac{\sqrt{2}}{2} \times -\frac{7\sqrt{2}}{10} = \frac{7}{10} \rightarrow \boxed{\frac{7}{10}}$$

ب) $\sin\left(\frac{13\pi}{4} + \alpha\right) \rightarrow \sin\frac{13\pi}{4} \cos\alpha + \cos\frac{13\pi}{4} \sin\alpha$

$$\tan \alpha = \frac{1}{\sqrt{2}}$$

$$\sqrt{1+2} = \sqrt{3} = \sec \alpha$$



$$\sin \alpha = \frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{1}{\sqrt{2}}$$

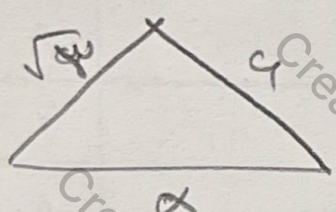
$$\cos \alpha = \frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{1}{\sqrt{2}}$$

$$\Rightarrow \frac{\sqrt{2}}{2} + \frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{2} = \frac{3}{2}$$

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

$$\sin^2 \alpha \cos^2 \alpha = \frac{1}{2} \rightarrow \sin^2 \alpha = \frac{1}{2} \rightarrow \cos^2 \alpha = \frac{1}{2} \rightarrow \tan^2 \alpha = \frac{1}{1} \rightarrow \tan \alpha = 1$$

$$S = \frac{1}{2} \times 4 \times \sqrt{3} \times \sin \alpha = 10$$



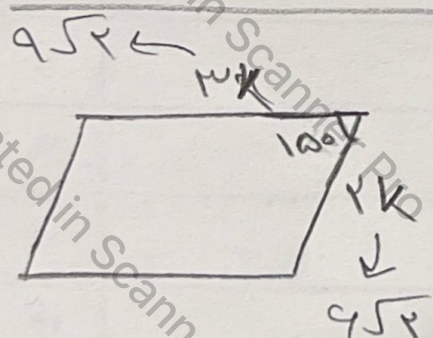
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$$\sin \alpha = \frac{\sqrt{3}}{2}$$

بسیار

$\alpha = 60^\circ$

$\alpha = 120^\circ$



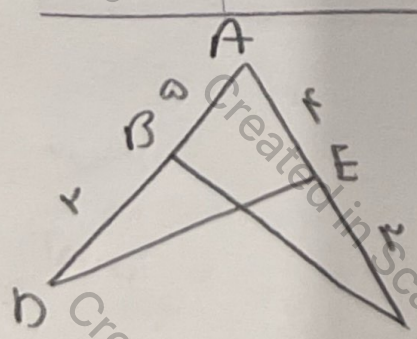
$$S = \frac{1}{2} \times 10 \times 4 \times \sin \alpha = 10$$

$\sin \alpha = \frac{1}{2}$

$\alpha = 30^\circ$

$\alpha = 150^\circ$

$$P = \frac{1}{2} (10\sqrt{3} + 4\sqrt{3}) = 10\sqrt{3}$$



$$S_{ABE} = \frac{1}{2} \times 10 \times 4 \times \sin A = 10$$

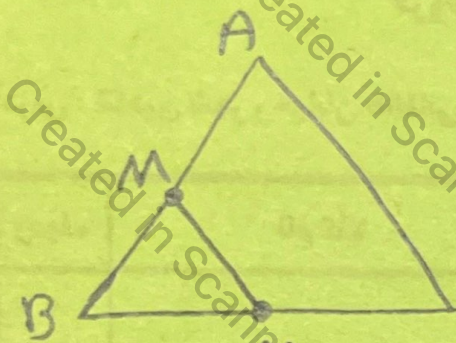
$$S_{BCE} = \frac{1}{2} \times 10 \times 4 \times \sin A = 10$$

$10 - 10 = 0$

$\tan A = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

$\cos A = \frac{\sqrt{3}}{2}$

$\sin A = \frac{1}{2}$



$$\angle B N \leq \angle N C \rightarrow B N \leq \frac{1}{2} N C$$

$$\triangle A B C \sim \triangle B M N$$

$$\frac{1}{2} \times A B \times B C \times \sin B = \frac{1}{2} \times B M \times B N \times \sin B$$

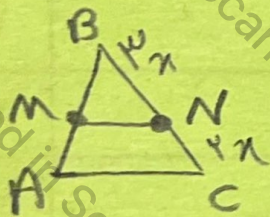
$$B C \leq B N + N C \rightarrow B C \leq B N + \frac{1}{2} B N = \frac{3}{2} B N$$

$$A B \leq A M + B M \rightarrow \frac{1}{2} B N \rightarrow B M \leq A M \rightarrow A M \leq \frac{1}{2} B M$$

$$\frac{B M}{A M} \leq \frac{1}{2}$$

$$A B \times \frac{1}{2} \times \sin B \leq \left(\frac{1}{2} \times \sin B \times B M \right)$$

$$O B M \times \frac{1}{2} A M \leq A B M \rightarrow \frac{B M}{A M} \leq \frac{1}{2}$$



$$\frac{1}{\sqrt{\cos^2} |\cos|} - \frac{\sin}{\cos} \rightarrow \frac{1}{|\cos|} - \frac{1 + \sin}{|\cos|} \leq \frac{\sin}{\cos}$$

$$\frac{1 - \sin}{|\cos|} \leq \frac{\sin}{\cos}$$

$$\frac{1 + \sin}{\cos} \leq -\frac{\sin}{\cos} \rightarrow | \sin | \leq -\sin \rightarrow \sin \leq 0$$

$$-|\cos| \leq \cos \leq \cos$$

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