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الف) $\tan \frac{11\pi}{4} \rightarrow -1$ $\sin \frac{15\pi}{4} \rightarrow -\frac{\sqrt{2}}{2}$ $\cos \frac{13\pi}{4} \rightarrow -\frac{\sqrt{2}}{2}$

$-1 + \left(-\frac{\sqrt{2}}{2} \times -\frac{\sqrt{2}}{2} \right) = \left(-\frac{1}{2} \right)$ ✓

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

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ب) $\tan \frac{11\pi}{4} \rightarrow -\frac{1}{\sqrt{3}}$ ✓ $\sin \frac{11\pi}{4} \rightarrow -\frac{\sqrt{3}}{2}$ ✓ $\cos \frac{10\pi}{4} \rightarrow -\frac{1}{2}$ ✓ $\rightarrow \left(-\frac{1}{\sqrt{3}} \times -\frac{\sqrt{3}}{2} \right) + \left(-\frac{1}{2} \right) = 0$ (فقط!)

$\frac{r \cos x - \sin x}{\cos x + \sin x} \Rightarrow \frac{\frac{r \cos x}{\sin x} - \frac{\sin x}{\sin x}}{\frac{\cos x}{\sin x} + \frac{\sin x}{\sin x}} = \left(\frac{11}{a} \right)$ ✓

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$\sin \alpha = -$ $\cos \alpha = -$
 $\tan \alpha = r$

$1 + \tan^2 r = \frac{1}{\cos^2 r} \Rightarrow 1 + r^2 = \frac{1}{\cos^2 r}$

$a = \frac{1}{\cos^2 r} \Rightarrow \sqrt{a} = \frac{1}{\cos} \Rightarrow \frac{1}{\sqrt{a}} = \cos$

$\Rightarrow \frac{1}{\sqrt{a}} \times \frac{\sqrt{a}}{\sqrt{a}} = \left(\frac{-\sqrt{a}}{a} \right)$ (نایب سو!)

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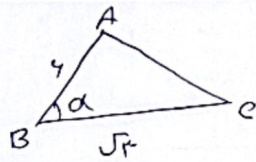
$r \sin^2 \alpha + \cos^2 \alpha = \frac{r}{r} \rightarrow \cos^2 \alpha = 1 - \sin^2 \alpha$

$\sin^2 \alpha + \sin^2 \alpha + 1 - \sin^2 \alpha = \frac{r}{r} \rightarrow 1 + \sin^2 \alpha = \frac{r}{r} \rightarrow \sin^2 \alpha = \frac{1}{r} \rightarrow \sin \alpha = \frac{1}{\sqrt{r}}$

$\cos^2 \alpha = 1 - \frac{1}{r} = \frac{r-1}{r} \Rightarrow \frac{\sin^2 \alpha}{\cos^2 \alpha} = \frac{\frac{1}{r}}{\frac{r-1}{r}} = \left(\frac{1}{r-1} \right) \rightarrow \tan^2 r$

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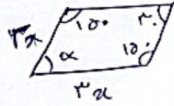


$$\frac{1}{2} \times 4 \times \sqrt{2} \times \sin \alpha = \varepsilon_1 \delta$$

$$\sqrt{2} \times \sin \alpha = \varepsilon_1 \delta$$

$$\Rightarrow \sin \alpha = \frac{\varepsilon_1 \delta}{\sqrt{2}} \rightarrow \frac{1/\delta \sqrt{2}}{2/\sqrt{2}} \Rightarrow \frac{\sqrt{2}}{2}$$

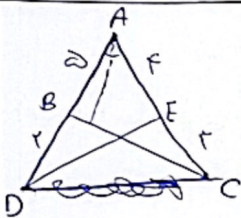
$$\sin^{-1} \frac{\sqrt{2}}{2} \Rightarrow 45^\circ \quad \sin^{-1} \frac{1}{2} \Rightarrow 30^\circ \rightarrow \frac{120}{40} = (2) \rightarrow \text{مطلوب}$$



$$2x \times 2x \times \frac{1}{2} = 10 \quad \alpha = 30^\circ$$

$$4x^2 = 10 \Rightarrow x^2 = 10/4 \Rightarrow x = \sqrt{10}/2 \Rightarrow x = \sqrt{2}$$

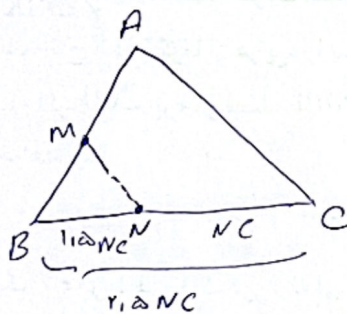
$$2x = 4\sqrt{2} \quad 2x = 4\sqrt{2} \quad 1\sqrt{2} + 1\sqrt{2} = (2\sqrt{2})$$



$$S_{ABC} = \frac{1}{2} \times BC \times \sin A \times \frac{1}{2} \Rightarrow \frac{1}{2} \times BC \times \sin A = 100$$

$$S_{ADE} = \frac{1}{2} \times DE \times \sin A \times \frac{1}{2} \Rightarrow \frac{1}{2} \times DE \times \sin A = 10$$

$$A = 30^\circ \quad \tan 30^\circ = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$



$$S_{ABC} = 4 S_{BMN}$$

$$\Rightarrow \frac{1}{4} \times AB \times BC \times \sin B = \frac{1}{4} \times BM \times BN \times \sin B \times 4$$

$$\cos \alpha \rightarrow - \quad \cot \alpha = + \quad \tan \alpha = +$$

$$\Rightarrow \alpha \rightarrow 120^\circ$$

(2)

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(2)

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(2)

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(2)

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الف) $\cos^2 \alpha = 1 - \sin^2 \alpha \rightarrow \cos^2 \alpha = \frac{9}{100} \xrightarrow{\text{جذر}} \cos \alpha = -\frac{\sqrt{9}}{10}$ (ف)

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

$$= -\left(\cos \alpha \cos \frac{\pi}{4} + \sin \alpha \sin \frac{\pi}{4}\right) = -\left(-\frac{\sqrt{2}}{10} \times \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{10} \times \frac{\sqrt{2}}{2}\right) = \frac{2}{10}$$

ب) $1 + \frac{\tan^2 \alpha}{\frac{1}{49}} = \frac{1}{\cos^2 \alpha} \xrightarrow{\text{جذر}} \cos \alpha = \frac{\sqrt{2}}{10} \xrightarrow{\sin^2 \alpha + \cos^2 \alpha = 1} \sin \alpha = \frac{\sqrt{2}}{10}$

$$\sin\left(\frac{13\pi}{4} + \alpha\right) = \sin\left(\pi + \frac{\pi}{4} + \alpha\right) = -\sin\left(\frac{\pi}{4} + \alpha\right) \xrightarrow{\text{مشتق}} -\frac{2}{10}$$