

الف) $\tan \frac{11\pi}{4} + \sin \frac{15\pi}{4} \cos \frac{13\pi}{4} = -\tan \frac{\pi}{4} + (-\sin \frac{\pi}{4})(-\cos \frac{\pi}{4})$ (۲) -1

$\downarrow \quad \downarrow \quad \downarrow$

$3\pi - \frac{\pi}{4} \quad 4\pi - \frac{\pi}{4} \quad 3\pi + \frac{\pi}{4}$

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

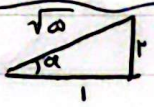
ب) $\tan \frac{17\pi}{9} \sin \frac{11\pi}{3} + \cos \frac{10\pi}{3} = \tan \frac{\pi}{9} \times (-\sin \frac{\pi}{3}) - \cos \frac{\pi}{3}$

$\downarrow \quad \downarrow \quad \downarrow$

$3\pi - \frac{\pi}{9} \quad 4\pi - \frac{\pi}{3} \quad 3\pi + \frac{\pi}{3}$

$-\frac{\sqrt{3}}{3} \times -\frac{\sqrt{3}}{2} - \frac{1}{2} = 0 \checkmark$

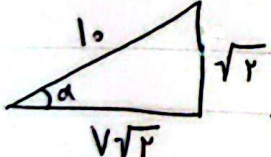
$\cot = \frac{\cos}{\sin} = 2 \quad 2 \sin = \cos \quad \frac{2 \cos - \sin}{\cos + \sin} = \frac{2(2 \sin) - \sin}{2 \sin + \sin} = \frac{3}{3} = 1 \checkmark$ (۲)

$\sin a = 2 \cos a \rightarrow \tan a = 2$  $\cos = \frac{1}{\sqrt{5}} \xrightarrow{\text{مربع}} -\frac{1}{\sqrt{5}} \checkmark$ (۳) -۳

۴- الف) $\cos \left(\frac{11\pi}{4} + a \right) = \cos \frac{11\pi}{4} \cos a - \sin \frac{11\pi}{4} \sin a$ (۲)

$\downarrow \quad \downarrow$

$3\pi - \frac{\pi}{4} \quad 3\pi - \frac{\pi}{4}$

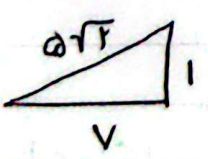
 $\rightarrow \cos a = \frac{8}{10} = \frac{4}{5}$

$-\frac{\sqrt{2}}{2} \times \frac{4}{5} - \frac{\sqrt{2}}{2} \times \frac{6}{5} = -\frac{4\sqrt{2}}{10} - \frac{6\sqrt{2}}{10} = -\frac{10\sqrt{2}}{10} = -\sqrt{2} \checkmark$

ب) $\sin \left(\frac{13\pi}{4} + a \right) = \sin \frac{13\pi}{4} \cos a + \sin a \cos \frac{13\pi}{4}$ (۲)

$\downarrow \quad \downarrow$

$3\pi + \frac{\pi}{4} \quad 3\pi + \frac{\pi}{4}$

 $\Rightarrow \sin a = \frac{3}{5}, \cos a = \frac{4}{5}$

$-\frac{\sqrt{2}}{2} \times \frac{4}{5} + \frac{1}{5} \times -\frac{\sqrt{2}}{2} = -\frac{4\sqrt{2}}{10} - \frac{\sqrt{2}}{10} = -\frac{5\sqrt{2}}{10} = -\frac{\sqrt{2}}{2} \checkmark$

$2 \sin^2 + \cos^2 = \frac{4}{5} \rightarrow \sin^2 + \sin^2 + \cos^2 = \frac{4}{5} \Rightarrow \sin^2 = \frac{1}{5}$ -۵

$1 + \cot^2 = 5 \rightarrow \cot^2 = 4 \rightarrow \tan^2 = \frac{1}{4} \checkmark$ (۲)

$$\frac{1}{\sqrt{3}} \times 6 \times \sqrt{3} \times \sin \alpha = 4, \Delta \Rightarrow -3\sqrt{3} \sin \alpha = 4, \Delta$$

(2) - 9

$$\sin \alpha = \frac{4, \Delta}{3\sqrt{3}} = \frac{1, \Delta}{\sqrt{3}} = \frac{3}{2\sqrt{3}} = \frac{\sqrt{3}}{2} \begin{matrix} \nearrow 60^\circ \\ \searrow 120^\circ \end{matrix} \quad \frac{120}{60} = 2 \checkmark$$

$$2K \times 3K \times \sin 120^\circ = 4\sqrt{3} \Rightarrow 6K^2 \times \frac{1}{2} = 4\sqrt{3} \Rightarrow K^2 = 1 \Rightarrow K = \sqrt{3} \quad - 1$$

(2)

$$\text{مساحت} = 2(2K + 2K) = 2(-2 \times \sqrt{3} + 3 \times \sqrt{3}) = 3\sqrt{3} \checkmark$$

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

$$\frac{V}{\sqrt{3}} \sin A = \frac{V}{\sqrt{3}} \Rightarrow \sin A = \frac{1}{\sqrt{3}} \Rightarrow A \begin{matrix} \nearrow 35.26^\circ \text{ و } 64.73^\circ \\ \searrow 144.73^\circ \text{ و } 215.26^\circ \end{matrix}$$

$$\tan 35.26^\circ = \frac{\sqrt{3}}{2}$$

(2) - 1

$$2BN = 3NC \Rightarrow BN = 2K \\ NC = 2K$$

$$\frac{S_{\triangle ABC}}{S_{\triangle MBN}} = \frac{\frac{1}{2} \times AB \times \Delta K \times \sin B}{\frac{1}{2} \times MD \times 2K \times \sin B} = 3 \Rightarrow$$

(2)

$$AM = AB - MB = 4y$$

$$4MB = \Delta AB \quad MB = \Delta x \\ AB = 4y$$

$$\frac{BM}{AM} = \frac{\Delta x}{4y} = \frac{\Delta}{4} \checkmark$$

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

(2) - 1

$$\Rightarrow \frac{-\sin^2 \alpha}{|\cos \alpha|} = \frac{\sin \alpha}{\cos \alpha} \Rightarrow -\sin \alpha \cos \alpha = \sin \alpha |\cos \alpha| \Rightarrow -\cos \alpha = |\cos \alpha|$$

 $\Rightarrow \cos$ منفی است

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

$$\left. \begin{matrix} \sin \rightarrow \text{منفی} \\ \cos \rightarrow \text{منفی} \end{matrix} \right\} \Rightarrow \text{ربع سوم} \checkmark$$

 $\sin \alpha$ منفی است.