

تکلیف شماره 18

آیا حتماً - دهم دفتر B

۲. عالی

سوال 1

$$\text{الف) } \tan \frac{11\pi}{4} + \sin \frac{10\pi}{4} \cos \frac{13\pi}{4} \Rightarrow -1 + \left( \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} \right) = -1 + \frac{1}{2} = -\frac{1}{2}$$

$$\tan \frac{13\pi}{4} = -1 \quad \sin \frac{10\pi}{4} = \frac{\sqrt{2}}{2} \quad \cos \frac{13\pi}{4} = \frac{\sqrt{2}}{2}$$

$$\text{ب) } \tan \frac{17\pi}{4} \sin \frac{11\pi}{4} + \cos \frac{10\pi}{4} = \frac{1}{2} - \frac{1}{2} = 0$$

$$\tan \frac{17\pi}{4} = \tan \left( \pi - \frac{\pi}{4} \right) = -\tan \left( \frac{\pi}{4} \right) = -\frac{\sqrt{2}}{2}$$

$$\sin \frac{11\pi}{4} = \sin \left( 2\pi - \frac{\pi}{4} \right) = -\sin \left( \frac{\pi}{4} \right) = -\frac{\sqrt{2}}{2}$$

$$\cos \frac{10\pi}{4} = \cos \left( \frac{5\pi}{2} \right) = 0$$

سوال ۲

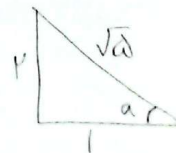
$$\cot x = k \rightarrow \frac{\cos x}{\sin x} = \frac{k}{1} \rightarrow k \sin x = \cos x$$

$$\frac{3 \cos x - \sin x}{\cos x + \sin x} = \frac{3(k \sin x) - \sin x}{k \sin x + \sin x} = \frac{11 \sin x}{4 \sin x} = \frac{11}{4}$$

$$\sin a = 2 \cos a \rightarrow \frac{\sin a}{\cos a} = 2 \Rightarrow \tan a = 2$$

$$\text{برای } \sin < 0 \quad \cos < 0$$

$$\tan > 0 \quad \cot > 0$$



$$2^2 + 1^2 = 5$$

$$\sqrt{5}$$

سوال ۳

$$\sin a \Rightarrow \frac{\text{ضلع مقابل}}{\text{وتر}} \Rightarrow \frac{2}{\sqrt{5}} \Rightarrow \frac{2}{\sqrt{5}}$$

$$\cos a \Rightarrow \frac{\text{ضلع مجاور}}{\text{وتر}} = \frac{1}{\sqrt{5}} \Rightarrow \frac{1}{\sqrt{5}}$$

$$\cos\left(\frac{11\pi}{8} + a\right) = \cos \frac{11\pi}{8} \cos a - \sin \frac{11\pi}{8} \sin a$$

$$\Rightarrow \frac{-\sqrt{2}}{2} (\cos a + \sin a) \quad \cos a = 1 - \frac{1}{\sqrt{2}} = \frac{\sqrt{2}-1}{\sqrt{2}} \rightarrow \cos a = \frac{-\sqrt{2}}{2}$$

$$\frac{-\sqrt{2}}{2} + \frac{\sqrt{2}}{2} = \frac{-4\sqrt{2}}{2} = \left(-\frac{2\sqrt{2}}{1} \times \frac{\sqrt{2}}{1}\right) = \frac{-4}{1}$$

$$\left(\sin \frac{11\pi}{8} + a\right) = \sin \frac{11\pi}{8} \cos a + \sin a \cos \frac{11\pi}{8} = \frac{-\sqrt{2}}{2} (\cos a + \sin a)$$

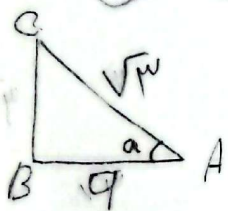
$$\sqrt{2} \sin \frac{\pi}{4} + \cos \frac{\pi}{4} = \frac{1}{\sqrt{2}} \tan a = \frac{\sin a}{\cos a} = \frac{1}{\sqrt{2}} \rightarrow \sqrt{2} \sin a = \cos a$$

$$\sin^2 a + \cos^2 a = 1 \rightarrow \sin^2 a = 1 - \cos^2 a$$

$$\sqrt{2}(1 - \cos^2 a) + \cos^2 a = \frac{1}{\sqrt{2}} \Rightarrow \sqrt{2} - \sqrt{2}\cos^2 a + \cos^2 a = \frac{1}{\sqrt{2}} \Rightarrow -\cos^2 a = \frac{1}{\sqrt{2}} - \sqrt{2}$$

$$-\cos^2 a = \frac{1-2}{\sqrt{2}} \rightarrow -\cos^2 a = \frac{-1}{\sqrt{2}} \rightarrow \cos^2 a = \frac{1}{\sqrt{2}} \rightarrow \sin^2 a + \frac{1}{\sqrt{2}} = 1 \rightarrow \sin^2 a = \frac{1}{\sqrt{2}}$$

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



$$S_{\Delta} = \frac{1}{2} \times AB \times BC \times \sin a$$

$$\frac{1}{2} \times 1 \times 1 \times \sqrt{2} \times \sin a = \frac{1}{2} \rightarrow \sqrt{2} \sin a = 1$$

$$\sin a = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2} \rightarrow \sin a \rightarrow a = 45^\circ \quad \left. \begin{array}{l} a = 45^\circ \\ a = 135^\circ \end{array} \right\} \frac{\pi}{4} \quad \frac{3\pi}{4}$$

135° = بیست و سه  
45° = بیست و هفت

$$\frac{a_{\text{ب}}}{a_{\text{ج}}} = \frac{135^\circ}{45^\circ} = 3 \text{ برابر}$$

سوال 7

$$S = AB \times BC \times \sin a$$

$$\sin 120^\circ = \sin 60^\circ = \frac{\sqrt{3}}{2}$$

$$24 = 2k \times 3k \times \frac{1}{2} \rightarrow 24 = 3k^2 \rightarrow k^2 = 8 \Rightarrow k = 2\sqrt{2}$$

$$2k = 2 \times 2\sqrt{2} = 4\sqrt{2}$$

$$3k = 3 \times 2\sqrt{2} = 6\sqrt{2}$$

$$p = 2(a+b) = 2(4\sqrt{2} + 6\sqrt{2}) = 2 \times 10\sqrt{2} = 20\sqrt{2}$$

سوال ۸

$$S_{ABC} - S_{ADE} \rightarrow \left( \frac{1}{P} \times \omega \times V \times \sin A \right) - \left( \frac{1}{P} \times \cancel{\omega} \times V \times \sin A \right)$$

$\frac{\omega \omega}{P} = \omega \omega \sin A$        $\omega \sin A$

$$\sin A \left( \frac{\omega \omega}{P} - \omega \right) = \omega \omega$$

$$\sin A = \frac{\frac{\omega}{\cancel{\omega}}}{\frac{\omega}{P}} = \frac{1}{P} \quad \text{از رابطه } \frac{a}{\sin A} = \frac{b}{\sin B} \rightarrow \cos A = \frac{\sqrt{3}}{2}$$

$$\tan a = \frac{\sin A}{\cos A} = \frac{\frac{1}{P}}{\frac{\sqrt{3}}{2}} = \frac{1}{\sqrt{3}}$$

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$$P_{BN} = P_{NC} \rightarrow \frac{BN}{NC} = \frac{\omega}{P}, \quad \frac{BN}{BC} = \frac{\omega}{\omega}$$

سوال ۹

$$\left. \begin{aligned} S_{ABC} &= \frac{1}{P} \times AB \times BC \times \sin B \\ S_{BMN} &= \frac{1}{P} \times BM \times BN \times \sin B \end{aligned} \right\} \frac{S_{BMN}}{S_{ABC}} = \frac{BM \times BN}{AB \times BC}$$

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$$\frac{1}{\omega} = \frac{BM}{AB} \times \frac{\omega}{\omega} \rightarrow \frac{BM}{AB} = \frac{1}{\omega} \times \frac{\omega}{\omega} = \frac{\omega}{9} \rightarrow MB = \frac{\omega}{9} AB$$

$$AM = AB - BM = AB - \frac{\omega}{9} AB = \frac{8}{9} AB \rightarrow \frac{BM}{AM} = \frac{\frac{\omega}{9} AB}{\frac{8}{9} AB} = \frac{\omega}{8}$$

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

چون  $\cos \alpha < 0$  علامت کسری می‌شود

سوال ۱۰

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

چون علامت کسری می‌شود

$$\Rightarrow \sin \alpha < 0, \cos \alpha < 0$$

مجموع

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