یازدهم ریاضی — تکلیف ۲۷ — نیوشا هاشم‌پور

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$\frac{1}{2} \times 6 \times \sqrt{3} \times \sin\alpha = 4.5 \rightarrow \sin\alpha = \frac{9}{6\sqrt{3}} = \frac{\sqrt{3}}{2}$

$\sin\alpha = \frac{\sqrt{3}}{2} \rightarrow \begin{cases} \alpha = \frac{\pi}{3} \\ \alpha = \frac{2\pi}{3} \end{cases} \rightarrow \frac{\alpha_{max}}{\alpha_{min}} = \frac{\frac{2\pi}{3}}{\frac{\pi}{3}} = \boxed{2}$

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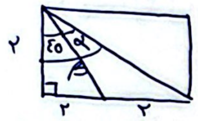

$\beta = 45^\circ + \alpha \rightarrow \alpha = \beta - 45^\circ$

$\tan = \frac{\tan\beta - \tan 45^\circ}{1 + \tan\beta \cdot \tan 45^\circ} = \frac{2-1}{1+2} = \frac{1}{3} \rightarrow \cot\alpha = 3$

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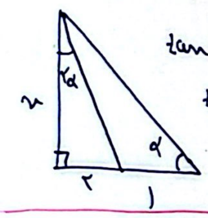
$\sin 2\alpha = 2\sin\alpha\cos\alpha \rightarrow \frac{2}{\ } =$



$\tan 2\alpha = \frac{2}{x} = \frac{2\tan\alpha}{1-\tan^2\alpha} \rightarrow \frac{2}{x} = \frac{\frac{2x}{3}}{\frac{9-x^2}{9}} \Rightarrow \frac{18x}{27-3x^2} = \frac{2}{x} \rightarrow 18x^2 = 54 - 6x^2$

$24x^2 = 54$

$12x^2 = 27 \rightarrow 4x^2 = 9 \rightarrow x^2 = \frac{9}{4}$

$x = \frac{3}{2}$

$\tan\alpha = \frac{x}{3}$

$1 - \frac{x^2}{9} = \frac{9-x^2}{9}$

$\tan\alpha = \frac{\frac{x}{3}}{\ } = \frac{1}{2} \rightarrow \tan\alpha = \frac{1}{2}$

$\boxed{\cot\alpha = 2}$

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$AB^2 = AH^2 + BH^2 \rightarrow 16 = AH^2 + 9 \qquad AH^2 = 7 \rightarrow AH = \sqrt{7}$

$\tan(\pi - \alpha) = \frac{\sqrt{7}}{3} \rightarrow -\tan\alpha = \frac{\sqrt{7}}{3} \qquad \tan\alpha = -\frac{\sqrt{7}}{3}$

$\underbrace{\sin^2 x}_{\frac{1}{3}} + \underbrace{\sin^2 x + \cos^2 x}_{1} = \frac{4}{3}$

$\sin^2 x = \frac{1}{3} \rightarrow \sin x = \pm\frac{1}{\sqrt{3}}$

$\cos^2 x = \frac{2}{3} \rightarrow \cos x = \pm\frac{\sqrt{2}}{\sqrt{3}}$

$\tan^2\alpha = \frac{\sin^2 x}{\cos^2 x} = \frac{\frac{1}{3}}{\frac{2}{3}} = \boxed{\frac{1}{2}}$

$x = \frac{\pi}{2}$ فرض میکنیم $\Big\langle$ $\sin\alpha = 1$, $\cos\alpha = 0$ $\to 1 - 2 = \boxed{-1}$

$$\underbrace{\frac{1+0}{1}}_{1} - \underbrace{\frac{0+4}{1+1}}_{2} = \boxed{-1}$$

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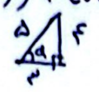
$$\sin\left(\frac{9\pi}{2}+\alpha\right)\cos\left(\frac{7\pi}{2}-\alpha\right) - \tan\left(\alpha-\frac{3\pi}{2}\right) = \sin\left(\frac{\pi}{2}+\alpha\right)\cos\left(\frac{3\pi}{2}-\alpha\right) + \tan\left(\frac{3\pi}{2}-\alpha\right)$$

$$\cos(\alpha)(-\sin(\alpha)) + \cot(\alpha)$$

$\tan\alpha = \frac{4}{3} \to$  $\to \begin{cases} \cos\alpha = -\frac{3}{5} \\ \sin\alpha = -\frac{4}{5} \\ \cot\alpha = \frac{3}{4} \end{cases}$ $\left(-\frac{3}{5}\right)\left(-\left(-\frac{4}{5}\right)\right) + \frac{3}{4} = -\frac{12}{25} + \frac{3}{4} = \frac{27}{100} = \boxed{0.27}$

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$$(\underbrace{3\cos 4x}_{\frac{3}{2}} + \sqrt{2}\sin x - \sqrt{2}\cos x)$$

$$2\times\left(\underbrace{\frac{\sqrt{2}}{2}}_{\cos\frac{\pi}{4}}\sin x - \underbrace{\frac{\sqrt{2}}{2}}_{\sin\frac{\pi}{4}}\cos x\right) = 2\sin\left(x-\frac{\pi}{4}\right)$$

$$2\sin -\frac{\pi}{6} = -2\sin\frac{\pi}{6} = -1$$

$$\frac{3}{2} + (-1) = \boxed{\frac{1}{2}}$$

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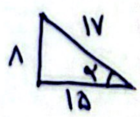
$$\tan\frac{\alpha}{2} = \frac{\sin\alpha}{1+\cos\alpha} = \frac{1-\cos\alpha}{\sin\alpha} = \frac{1}{4}$$

$$\frac{\tan\alpha - \sin\alpha}{\sin\alpha - \cos\alpha} = ?$$

$$\tan^2\left(\frac{\alpha}{2}\right) = \frac{1-\cos\alpha}{1+\cos\alpha} = \frac{1}{16} \to \underbrace{16 - 16\cos\alpha = 1 + \cos\alpha}_{\frac{15}{17} = \cos\alpha}$$

$$\frac{\sin}{\cos} - \sin \quad \frac{\sin - \sin\cos}{\cos} = \frac{\frac{\sin(1-\cos)}{\cos}}{\frac{\sin-\cos}{1}} = \frac{\sin(1-\cos)}{\sin\cos - \cos^2}$$

 $\to \sin\alpha = \frac{8}{17}$, $\tan\alpha = \frac{8}{15}$

$$\frac{\tan\alpha - \sin\alpha}{\sin\alpha - \cos\alpha} = \frac{\frac{16}{15\times17}}{\frac{-7\times17}{17\times17}} = \frac{-16}{105}$$

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$$2\sin\alpha < \sin 2\alpha \to 2\sin\alpha\cos\alpha$$

$$\sin\alpha < 0$$

$$\frac{\cot\alpha}{\sin\alpha} > 0$$

$$\cos\alpha > 0$$

ربع اول و چهارم

ناحیه چهارم