نام و نام خانوادگی: میلاد امانی .... پاسخنامه تشریحی تکلیف شماره «۲۷» کلاس یازدهم ریاضی B ....

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$S = 4/5$

$S = \frac{1}{2} ab\sin\alpha \Rightarrow \frac{6\sqrt{3}}{2} \times \sin\alpha = 4/5 \Rightarrow 6\sqrt{3}\sin\alpha = 9 \Rightarrow \sin\alpha = \frac{3}{2\sqrt{3}} = \frac{\sqrt{3}}{2} \Rightarrow \alpha = 60, 120$

$\frac{\alpha_{max}}{\alpha_{min}} = \frac{120}{60} = 2$

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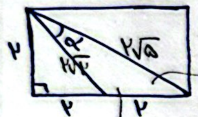

$2 = \sqrt{8 + 20 - 8\sqrt{10}\cos\alpha} \Rightarrow 4 = 28 - 8\sqrt{10}\cos\alpha \Rightarrow 8\sqrt{10}\cos\alpha = 24 \Rightarrow \cos\alpha = \frac{3}{\sqrt{10}}$

$S = 2$: $2 = \frac{1}{2} \times 2\sqrt{2} \times 2\sqrt{5} \times \sin\alpha \Rightarrow \sin\alpha = \frac{1}{\sqrt{10}}$

$\cot\alpha = 3$

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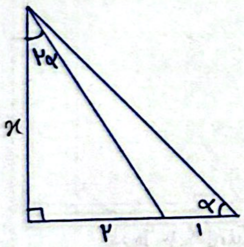

$\tan 2\alpha = \frac{2}{x}$ $\qquad \tan\alpha = \frac{x}{3}$

$\tan 2\alpha = \frac{2\tan\alpha}{1-\tan^2\alpha} \Rightarrow \frac{2}{x} = \frac{2(\frac{x}{3})}{1-\frac{x^2}{9}} = \frac{6x}{9-x^2} \Rightarrow 18 - 2x^2 = 6x^2 \Rightarrow x^2 = \frac{18}{8} = \frac{9}{4}$

$\Rightarrow x = \pm\frac{3}{2} \Rightarrow \tan\alpha = \frac{1}{2} \Rightarrow \cot\alpha = 2$

غ ق ق — زیرا α زاویه حاده

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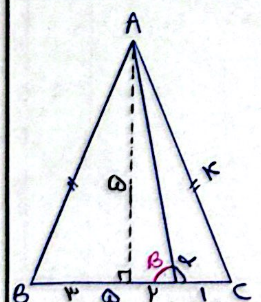

$\tan\alpha = ?$

$\tan\beta = \frac{5}{2} \Rightarrow \tan\alpha = -\frac{5}{2}$

$AC^2 = CH^2 + AH^2 \to AH = \sqrt{7}$ $\qquad \tan\alpha' = \frac{AH}{HD} = \frac{\sqrt{7}}{2}$

$\tan\alpha' = -\tan\alpha = \frac{-\sqrt{7}}{2}$

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$2\sin^2 x + \cos^2 x = \frac{4}{3}$ $\qquad \tan^2 x = ?$

$\xrightarrow{\div \cos^2 x} 2\tan^2 x + 1 = \frac{\frac{4}{3}}{\cos^2 x} = \frac{4}{3}(1+\tan^2 x) \Rightarrow 2\tan^2 x - \frac{4}{3}\tan^2 x = \frac{4}{3} - 1 \Rightarrow \frac{2}{3}\tan^2 x = \frac{1}{3} \Rightarrow \tan^2 x = \frac{1}{2}$

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

$\sin^4\alpha+\cos^4\alpha=1-2\sin^2\alpha\cos^2\alpha$

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

$\rightarrow (\sin^2\alpha-\cos^2\alpha)(\sin^2\alpha+\sin^2\alpha\cos^2\alpha+\cos^4\alpha)$ (۵)

$$\frac{(\sin^4\alpha-\cos^4\alpha)+4(\cos^2\alpha-\sin^2\alpha)+(\sin^4\alpha-\cos^4\alpha)}{1+\sin^2\alpha+\cos^2\alpha+\cos^2\alpha\sin^2\alpha}=\frac{(\sin^2\alpha-\cos^2\alpha)(1+\sin^2\alpha+\sin^2\alpha\cos^2\alpha+\cos^4\alpha-4)}{1+\sin^2\alpha+\cos^2\alpha+\cos^2\alpha\sin^2\alpha}$$

$+1$

$$=\frac{(\sin^2\alpha-\cos^2\alpha)(-2-\sin^2\alpha\cos^2\alpha)}{2+\sin^2\alpha\cos^2\alpha}=\cos^2\alpha-\sin^2\alpha=\boxed{\cos2\alpha}$$

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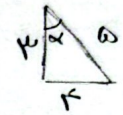
$\sin(\frac{9\pi}{2}+\alpha)\cos(\frac{7\pi}{2}-\alpha)\underbrace{\tan(\alpha-\frac{3\pi}{2})}_{+\tan(\frac{3\pi}{2}-\alpha)}$ ، $\tan\alpha=\frac{4}{3}$ انتهای کمان α در ربع سوم

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

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

$-(\frac{3}{5})(+\frac{4}{5})+\frac{3}{4}=-\frac{12}{25}+\frac{3}{4}=\frac{-48+75}{100}=\frac{27}{100}$

$\frac{-12}{25}$ $\quad$ $\frac{27}{100}$



$\sin\alpha=\frac{4}{5}$

$\cos\alpha=\frac{3}{5}$

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$(2\cos^2x+\sqrt{2}\sin x-\sqrt{2}\cos x)$ $\quad x=\frac{\pi}{12}=15^\circ$

$2\cos90+\sqrt{2}\underbrace{(\sin x-\cos x)}_{\sqrt{2}\sin(x-\frac{\pi}{4})}=\frac{3}{2}+2\sin(-45)=\frac{3}{2}-1=\boxed{\frac{1}{2}}$

$15-45$

(۵)

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$\tan\frac{\alpha}{2}=\frac{1}{4}$ ، $\tan(\frac{\alpha}{2})=\frac{1}{4}$ را در $\frac{\tan\alpha-\sin\alpha}{\sin\alpha-\cos\alpha}$

$$\tan\alpha=\frac{2\tan\frac{\alpha}{2}}{1-\tan^2\frac{\alpha}{2}}=\frac{\frac{1}{2}}{1-\frac{1}{16}}=\frac{\frac{1}{2}}{\frac{15}{16}}=\boxed{\frac{8}{15}}$$

$\tan\alpha=\frac{2\tan\frac{\alpha}{2}}{1-\tan^2\frac{\alpha}{2}}=\frac{8}{15}$ $\quad$ $\cos\alpha=\frac{15}{17}$ ، $\sin\alpha=\frac{8}{17}$

$$\frac{\tan\alpha-\sin\alpha}{\sin\alpha-\cos\alpha}=\frac{\frac{8}{15}-\frac{8}{17}}{\frac{8}{17}-\frac{15}{17}}=\frac{-14}{105}$$

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$2\sin\alpha<2\sin\alpha\cos\alpha$ ، $0<\frac{\cot\alpha}{\sin\alpha}$ ، $\sin2\alpha<\sin4\alpha$ انتهای کمان α در کدام ربع قرار دارد؟

$0<\frac{\cos\alpha}{\sin^2\alpha}\Rightarrow\boxed{\cos\alpha>0}$ $\quad$ $\boxed{\sin\alpha>0}$ $\Rightarrow$ هم‌علامت

(۱)

$\frac{\sin\alpha}{\sin\alpha}<\frac{\sin\alpha\cos\alpha}{\sin\alpha}\Rightarrow$ if $\sin\alpha>0\Rightarrow1<\sin\alpha$ غیرقابل

if $\sin\alpha<0\Rightarrow\boxed{-1>\sin\alpha}$ ✓