نام و نام خانوادگی ....صالح........ پاسخنامه تشریحی تکلیف شماره ..۲۷.. کلاس یازدهم B ....

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$S=\frac{1}{2}\times 6\times\sqrt{3}\times\sin\alpha=4/5 \to \sin\alpha=\frac{9}{6\sqrt{3}}=\frac{\sqrt{3}}{2}$

$\sin\alpha=\frac{\sqrt{3}}{2}\begin{cases}\alpha=\frac{\pi}{3}\\ \alpha=\frac{2\pi}{3}\end{cases}\longrightarrow \frac{a_{max}}{a_{min}}=\frac{\frac{2\pi}{3}}{\frac{\pi}{3}}=2$

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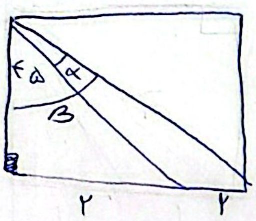

$\tan\alpha=\tan(\beta-45)=\frac{\tan\beta-\tan 45}{1+\tan\beta\tan 45}=\frac{2-1}{1+2}=\frac{1}{3}$

$\downarrow$

$\cot\alpha=3$

$\alpha+45=\beta\to\alpha=\beta-45$ $\quad\tan\beta=\frac{4}{2}=2$

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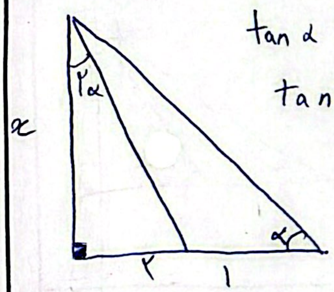


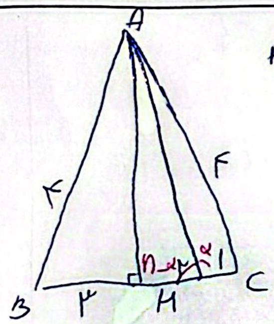
$\tan\alpha=\frac{x}{3}$

$\tan 2\alpha=\frac{2}{x}\longrightarrow \tan 2\alpha=\frac{2\tan\alpha}{1-\tan^2\alpha}\longrightarrow\frac{2}{x}=\frac{2(\frac{x}{3})}{1-\frac{x^2}{9}}$

$\frac{x^2}{3}=1-\frac{x^2}{9}\to x^2=\frac{9}{4}\to x=\frac{3}{2}$

$\cot\alpha=\frac{3}{\frac{3}{2}}=2$

۴



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

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

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

$\tan^2x=\frac{\frac{1}{3}}{\frac{2}{3}}=\frac{1}{2}$

۶

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

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

-1 $\quad -1$ $\quad +$

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

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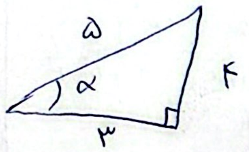
$$\sin\left(\frac{\pi}{2}+\alpha\right)\cos\left(\frac{3\pi}{2}-\alpha\right)+\tan\left(\frac{3\pi}{2}-\alpha\right)$$

$$=(\cos\alpha)(-\sin\alpha)+\cot\alpha=\left(-\frac{3}{5}\times\frac{4}{5}\right)+\frac{3}{4}=\frac{-48+75}{100}=\frac{27}{100}=0/27$$



۸

$$x=\frac{\pi}{12}\to 3\cos 4x+\sqrt{2}(\sin x-\cos x)=3\cos\frac{\pi}{3}+\sqrt{2}\Big(\sqrt{2}\underbrace{\sin\left(\frac{\pi}{12}-\frac{\pi}{4}\right)}_{-\frac{1}{2}}\Big)$$

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

۹

$$\tan 2\alpha=\frac{2\tan\alpha}{1-\tan^2\alpha}\qquad \tan\alpha=\frac{2\tan\frac{\alpha}{2}}{1-\tan^2\frac{\alpha}{2}}=\frac{\frac{2}{4}}{1-\frac{1}{16}}=\frac{8}{15}$$

$$1+\tan^2\alpha=\frac{1}{\cos^2\alpha}\to 1+\frac{64}{225}=\frac{1}{\cos^2\alpha}\to\cos^2\alpha=\frac{225}{289}\to\cos\alpha=\frac{15}{17}$$

$$\to\sin\alpha=\sqrt{1-\frac{225}{289}}=\frac{8}{17}\qquad \frac{\tan\alpha-\sin\alpha}{\sin\alpha-\cos\alpha}=\frac{\frac{8}{15}-\frac{8}{17}}{\frac{8}{17}-\frac{15}{17}}=\frac{-16}{105}$$

۱۰

$$2\sin\alpha-2\sin\alpha\cos\alpha<0\to 2\sin\alpha\underbrace{(1-\cos\alpha)}_{+}<0\ \overset{\text{پس}}{\rightsquigarrow}\ \sin\alpha<0$$

$$\frac{\cot\alpha}{\sin\alpha}>0\rightsquigarrow\frac{\cos\alpha}{\underbrace{\sin^2\alpha}_{+}}\rightsquigarrow\cos\alpha>0$$

ناحیه چهارم