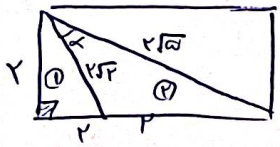
نام: فاطمه شیخی کلاس: یازدهم رشته A (۲۰) شماره تکلیف: 27

$S = \frac{1}{2} \times 9 \times \sqrt{3} \times \sin\alpha = 6.75 \rightsquigarrow \sin\alpha = \frac{1.5}{\sqrt{3}} = \boxed{\frac{\sqrt{3}}{2}} \begin{cases} \alpha = 60^\circ \\ \alpha = 120^\circ \end{cases}$

$\frac{\text{بیشترین } \max\alpha}{\text{کمترین } \min\alpha} = \frac{120^\circ}{60^\circ} = \boxed{2}$ جواب ★

1 (۵)

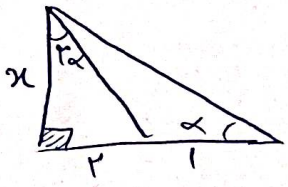


$S_2 = S_{\triangle} - S_1 \Rightarrow S_2 = 6 - 2 = 4$

$4 = \frac{1}{2} \times 2\sqrt{3} \times 2\sqrt{6} \times \sin\alpha \Rightarrow \sin\alpha = \frac{1}{\sqrt{10}}$

$1 + \cot^2\alpha = \frac{1}{\sin^2\alpha} \Rightarrow 10 = 1 + \cot^2\alpha \rightsquigarrow \boxed{\cot\alpha = 3}$ جواب ★

2 (۵)



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

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

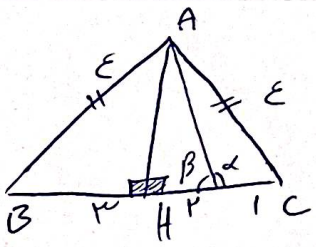
$\tan 2\alpha = \frac{2\tan\alpha}{1-\tan^2\alpha}$ فرمول

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

$x^2 = \frac{9}{4} \rightsquigarrow \boxed{x = \frac{3}{2}}$

$\cot\alpha = \frac{\frac{3}{2}}{1} = \boxed{2}$ جواب ★

3 (۵)

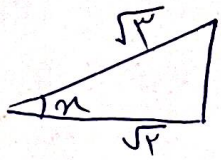


$AC^2 = Hc^2 + AH^2 \rightsquigarrow 14 = 9 + AH^2 \rightsquigarrow \boxed{AH = \sqrt{5}}$

$\tan\alpha = \tan(\pi - \beta) = -\tan\beta = \boxed{\frac{-\sqrt{5}}{2}}$ جواب ★

4 (۵)

$\sin^2 x + \underbrace{\cos^2 x}_{1} + \sin^2 x = \frac{8}{3} \Rightarrow \sin^2 x = \frac{1}{3} \rightsquigarrow \sin x = \frac{1}{\sqrt{3}}$



$\tan x = \frac{1}{\sqrt{2}} \rightsquigarrow \boxed{\tan^2 x = \frac{1}{2}}$ جواب ★

5 (۵)

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

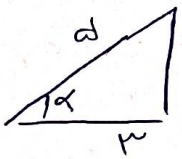
$$\frac{(\cos^2\alpha+1)^2}{1+\cos^2\alpha}-\frac{(\sin^2\alpha+1)^2}{\sin^2\alpha+1}=\cos^2\alpha+1-\sin^2\alpha-1=\cos^2\alpha-\sin^2\alpha=\boxed{\cos 2\alpha}$$

6

* جواب

7

$$\cos\alpha\times(-\sin\alpha)+\cot\alpha=\frac{3}{5}\times\frac{4}{5}+\frac{3}{4}=\boxed{0,24}$$ جواب *

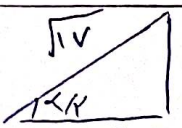


$\sin\alpha=\frac{4}{5}\ominus$ $\tan\alpha=\frac{4}{3}\oplus$

$\cos\alpha=\frac{3}{5}\ominus$ $\cot\alpha=\frac{3}{4}\oplus$

8

(این سوال ۹ هست)



$\sin\frac{\alpha}{2}=\frac{1}{\sqrt{17}}$ $\cos\frac{\alpha}{2}=\frac{4}{\sqrt{17}}$ $\tan\frac{\alpha}{2}=\frac{1}{4}$

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

$$\frac{\tan\alpha-\sin\alpha}{\sin\alpha-\cos\alpha}=\frac{\frac{1}{15}-\frac{5}{17}}{\frac{8}{17}-\frac{15}{17}}=\boxed{\frac{-16}{105}}$$ جواب *

9

(این سوال ۸ هست
حتما به جا بنویسم :)

$$2\cos\frac{\pi}{3}+\underbrace{\sqrt{2}\sin\frac{\pi}{12}-\sqrt{2}\cos\frac{\pi}{12}}_{\sqrt{2}\left(\sin\frac{\pi}{12}-\cos\frac{\pi}{12}\right)=-\sqrt{2}\times\sqrt{2}\sin\left(\frac{\pi}{12}-\frac{\pi}{4}\right)=-2\sin\frac{\pi}{6}}=\frac{3}{2}-1=\boxed{\frac{1}{2}}$$ جواب *

$$=\boxed{-1}$$

10

① $\frac{\cot}{\sin}>0\Rightarrow\frac{\cos}{\sin^2}>0\Rightarrow\boxed{\cos\alpha>0}$ ①

(هم‌علامت ⊕)

② $0<\sin 2\alpha-2\sin\alpha\Rightarrow 0<2\sin\alpha\cos\alpha-2\sin\alpha\Rightarrow 0<\underbrace{2\sin\alpha}_{\ominus}\underbrace{(\cos\alpha-1)}_{\ominus}\Rightarrow\boxed{\sin\alpha<0}$ ②

(هم‌علامت ⊖)

①,② $\Rightarrow$ * ناحیه‌ی ۴ *