نام و نام خانوادگی ..آرمین حسینی..... پاسخنامه تشریحی تکلیف شماره ..۲۷.. کلاس ..یازدهم ریاضی..

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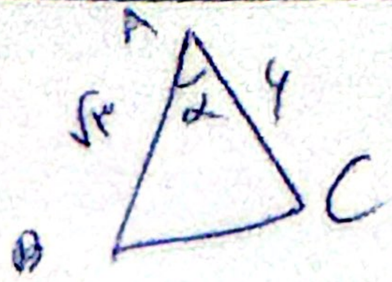
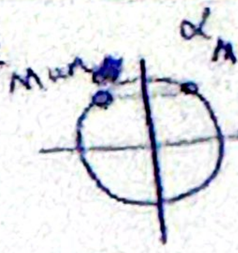


$S_\Delta = \frac{1}{2} \times 4\sqrt{3} \sin\alpha = 4\sqrt{3}$

$\sin\alpha = \frac{\sqrt{3}}{2}$



$\alpha_{min} = 60^\circ$

$\alpha_{max} = 120^\circ$

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

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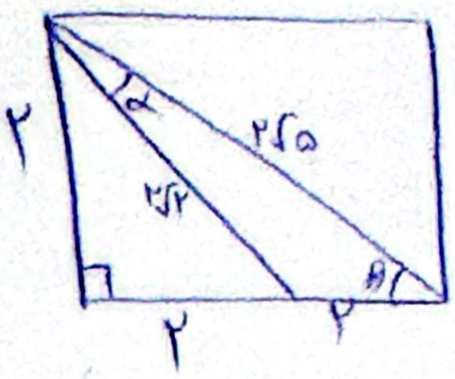
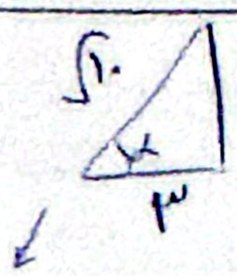


$\sin\beta = \frac{1}{\sqrt{5}}$

$\frac{2}{\sin\alpha} = \frac{\sqrt{5}}{\frac{1}{\sqrt{5}}}$ → $\sin\alpha = \frac{1}{\sqrt{10}}$



$\cot\alpha = 3$

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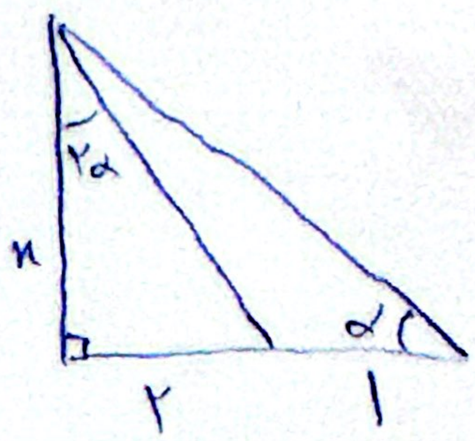

$\tan\alpha = \frac{4}{3}$ → $\frac{4}{3} \cdot 7^\circ \to 97^\circ$

$\tan 2\alpha = \frac{7}{4}$ → $\tan 2\alpha = \frac{2\tan\alpha}{1-\tan^2\alpha} = \frac{\frac{8}{3}}{1-\frac{16}{9}} = \frac{24}{7}$

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

$\cot\alpha = 2$

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

$\frac{5x^2}{9} = 1$ → $x = \frac{3}{5}$

$x = -\frac{3}{5}$ ق ق ی

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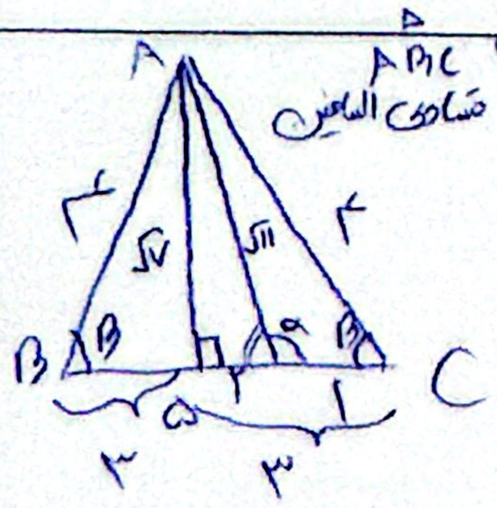

$\triangle ABC \sim \triangle ABH, \triangle AHC$ متشابهان

$\tan(\pi - \alpha) = \frac{\sqrt{7}}{2}$

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

۴

$2\sin^2\alpha + \cos^2\alpha = \frac{5}{3}$

$\sin^2\alpha = \frac{1}{3}$ → $\cos^2 = \frac{2}{3}$ → $1 + \tan^2 = \frac{\frac{3}{2}}{\cos^2}$ → $\tan^2 = \frac{1}{2}$

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

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

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

۶

$\tan\alpha = \frac{2}{\sqrt{5}}$

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

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

$$= -\frac{3}{5}\cdot\left(+\frac{2}{5}\right) + \frac{3}{2} = \frac{-12+35}{20} = \frac{23}{20} = 1.15$$

$-\frac{11}{35}$

۷

$$\left(3\cos^2\alpha + \sqrt{2\sin\alpha - \sqrt{2}\cos\alpha}\right)$$

$$\alpha = \frac{\pi}{12}$$

$$\sqrt{3}\sqrt{2}\left(\sin\alpha - \frac{\pi}{2}\right)$$

$$\left(3\cos^2\frac{\pi}{3} + \sqrt{2}^2\left(\sin\frac{\pi}{12} - \frac{3\pi}{12}\right)\right)$$

$$\downarrow$$

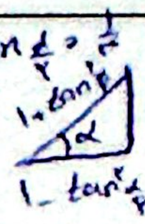
$$\frac{3}{3} + \sqrt{2}^2\left(-\frac{1}{2}\right) = 1$$

-1

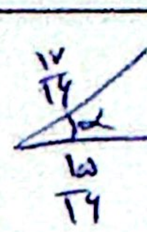
$-\frac{\pi}{4}$

۸

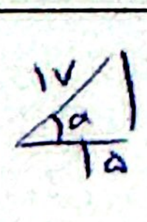
$\tan\frac{\alpha}{2} = \frac{1}{2}$



$\rightarrow$



$\rightarrow$



$\rightarrow \tan\alpha = \frac{4}{10}$

$\sin\alpha = \frac{4}{17}$

$\cos\alpha = \frac{15}{17}$

$$\frac{\tan\alpha - \sin\alpha}{\sin\alpha - \cos\alpha} = \frac{\frac{4}{10} - \frac{4}{17}}{\frac{4}{17} - \frac{15}{17}} = \frac{4\left(\frac{17-15}{15\times17}\right)}{-\frac{7}{17}} = -\frac{17}{105}$$

$\tan\frac{\alpha}{2} = \frac{1}{2} < \frac{1}{\sqrt{3}}$

$\frac{\alpha}{2} < 30^\circ \rightarrow \alpha < 60^\circ$

$-\frac{\alpha}{2} < 30^\circ$

$\alpha < 60^\circ$

$\frac{\alpha}{2} < 180^\circ n + \frac{\pi}{6}$

$\alpha < 360^\circ n + \frac{\pi}{3}$

۹

$2\sin\alpha\cos\alpha$

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

$0 < \frac{\cos\alpha}{\sin^2\alpha}$

$6\cos\alpha$

$2\sin\alpha < \sin 2\alpha$

$0 < 2\sin\alpha(\cos\alpha - 1)$

$0 < \sin\alpha$

$-2 \leq \cos\alpha - 1 \leq 0$

$\sin\alpha > 0$

$\cos\alpha < 0$

اشتراک حالت‌های بالا

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