نام و نام خانوادگی: [illegible]

تکلیف شماره ۶ ۲ کلاس یازدهم ریاضی B

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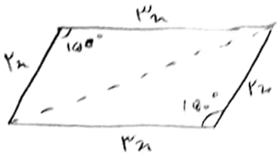

$2S_{\triangle} = S_{\square} = 2\times\frac{1}{2}\times\sin150\times2x\times3x = 54$

$\Rightarrow \frac{1}{2}\times6x^2 = 54 \Rightarrow 3x^2 = 54 \Rightarrow x^2 = 18 \Rightarrow x = 3\sqrt{2}$

$P = 2x+3x+2x+3x = 10x = 30\sqrt{2}$

۲-

$S_{ABC} = \frac{1}{2}\times5\times7\times\sin A = 17.5\sin\hat{A}$ $\quad S_{ADE} = \frac{1}{2}\times4\times7\times\sin A = 14\sin\hat{A}$

تفاوت مساحت ها [redacted] ۱.۷۵ است:

$S_{ABC} - S_{ADE} = 1.75 \Rightarrow 3.5\sin A = 1.75 \Rightarrow \sin A = \frac{1}{2}$

$\Rightarrow \hat{A} = 30^\circ \quad \tan30^\circ = \tan A = \frac{1}{\sqrt{3}}$

۳-

$\frac{1}{\sqrt{\cos^2\alpha}} - \tan\alpha = \frac{1+\sin\alpha}{|\cos\alpha|} \Rightarrow \frac{1}{|\cos\alpha|} - \tan\alpha = \frac{1+\sin\alpha}{|\cos\alpha|} \Rightarrow \frac{1}{|\cos\alpha|} - \tan\alpha = \frac{1}{|\cos\alpha|} + \frac{\sin\alpha}{|\cos\alpha|}$

$\Rightarrow -\frac{\sin\alpha}{\cos\alpha} = \frac{\sin\alpha}{|\cos\alpha|} \Rightarrow |\cos\alpha| = -\cos\alpha \Rightarrow \cos\alpha < 0$

$\frac{|\sin\alpha|}{\cos\alpha} = -\frac{1}{\cot\alpha} \Rightarrow \frac{|\sin\alpha|}{\cos\alpha} = -\frac{\sin\alpha}{\cos\alpha} \Rightarrow |\sin\alpha| = -\sin\alpha \Rightarrow \sin\alpha < 0$

ناحیه سوم

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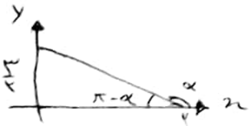


$\tan(\pi-\alpha) = \frac{\frac{3}{2}}{2} = \frac{3}{4}$ $\quad \tan(\frac{\pi}{2}-\alpha) = \cot\alpha \quad \tan(\pi-\alpha) = -\tan\alpha$

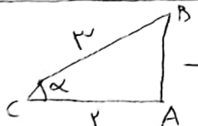
$-\tan\alpha = \frac{3}{4} \Rightarrow \tan\alpha = \frac{-3}{4} \Rightarrow \cot\alpha = \frac{-4}{3}$

۵-

$\frac{3\cos(248) - 2\sin(158)}{\sin(202) - \cos(292)} = \frac{3\cos(270-22) - 2\sin(180-22)}{\sin(180+22) - \cos(270+22)} = \frac{-3\sin22 - 2\sin22}{-\sin22 - \sin22} = \frac{-5\sin22}{-2\sin22} = \frac{5}{2}$

۶-

$\frac{3\pi}{2} < \alpha < 2\pi \quad \cos\alpha = \frac{2}{3}$



فیثاغورس $\Rightarrow AB = \sqrt{5} \Rightarrow \begin{cases} \sin\alpha = \frac{-\sqrt{5}}{3} \\ \tan\alpha = -\frac{\sqrt{5}}{2} \end{cases}$

$\Rightarrow \frac{\sin(\frac{\pi}{2}+\alpha) - \sin(\alpha-\pi)}{|\tan^2\alpha - 1|} = \frac{\cos\alpha + \sin\alpha}{|\frac{5}{4} - 1|} = \frac{\frac{2}{3} - \frac{\sqrt{5}}{3}}{\frac{1}{4}} = \frac{4(2-\sqrt{5})}{3}$

۷-

$\sin\alpha = 2\cos\alpha \xrightarrow{\div\cos\alpha} \tan\alpha = 2$

$\frac{1}{\cos^2\alpha} = 1 + \tan^2\alpha \Rightarrow \frac{1}{\cos^2\alpha} = 5 \Rightarrow \cos\alpha = \pm\frac{\sqrt{5}}{5} \xrightarrow{\text{ربع سوم}} \cos\alpha = \frac{-\sqrt{5}}{5}$

۸-

$2mx + (m^2-1)y = 3 \quad \tan60^\circ = \sqrt{3}$

$\frac{-2m}{m^2-1} = \sqrt{3} \Rightarrow \sqrt{3}m^2 + 2m - \sqrt{3} = 0 \Rightarrow |m_1 - m_2| = \frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{16}}{\sqrt{3}} = \frac{4}{\sqrt{3}}$

۹-

$-\frac{\pi}{4} < x < \frac{\pi}{4} \quad \tan(\frac{\pi}{4} - x) = \frac{1-m}{2+m} \quad -\frac{\pi}{4} < x < \frac{\pi}{4} \Rightarrow -\frac{\pi}{4} < x < \frac{\pi}{4} \Rightarrow 0 < \frac{\pi}{4} - x < \frac{\pi}{2}$

$\Rightarrow 0 < \tan(\frac{\pi}{4} - x) \Rightarrow 0 < \frac{1-m}{2+m} \Rightarrow$

-2		1	
-	+		-

$\Rightarrow -2 < m < 1$

۱۰

$\underbrace{\tan(300)}_{360-60}\underbrace{\cos(210)}_{180+30} + \underbrace{\tan(480)}_{3\times180-60}\underbrace{\sin(840)}_{5\times180-60} = -\tan60\times(-\cos30) + (-\tan60\times\sin60)$

$= (-\sqrt{3}\times\frac{-\sqrt{3}}{2}) + (-\sqrt{3}\times\frac{\sqrt{3}}{2}) = \frac{3}{2} - \frac{3}{2} = 0$