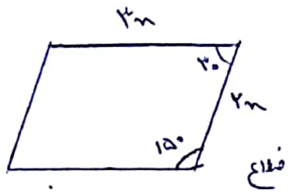
نام و نام خانوادگی ......الناهیشت اصفهانی.......... پاسخنامه تشریحی تکلیف شماره ..۲۶.. کلاس ....یازدهم ریاضی..A..........

۱



$S = ab\sin\alpha$

$S = (2x)(3x)(\sin 30°) = 6x^2 \times \frac{1}{2} = 3x^2 = 54 \Rightarrow x^2 = 18 \Rightarrow x = 3\sqrt{2}$

طول متوازی الاضلاع $= 3 \times 3\sqrt{2} = 9\sqrt{2}$ ، عرض متوازی الاضلاع $2 \times 3\sqrt{2} = 6\sqrt{2}$

محیط متوازی الاضلاع $= 2(\underbrace{9\sqrt{2} + 6\sqrt{2}}_{15\sqrt{2}}) = 30\sqrt{2}$

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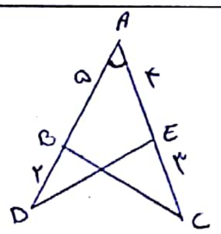

$S_{\triangle ABC} = \frac{1}{2} \times 5 \times 7 \times \sin A = \frac{35}{2}\sin A$

$S_{\triangle AED} = \frac{1}{2} \times 7 \times 4 \times \sin A = 14\sin A$

$S_{\triangle ABC} - S_{\triangle AED} = \frac{35}{2}\sin A - 14\sin A$

$\Rightarrow \frac{35}{2}\sin A - 14\sin A = 1/75 \Rightarrow 35\sin A - 28\sin A = 3/5 \Rightarrow 7\sin A = 3/5$

$\rightarrow \sin A = \frac{1}{2} \rightarrow \sin^2 A + \cos^2 A = 1 \Rightarrow \frac{1}{4} + \cos^2 A = 1 \Rightarrow \cos A = \pm\frac{\sqrt{3}}{2} \xrightarrow{\text{چون } A \text{ حاده است}} \cos A = \frac{\sqrt{3}}{2}$

$\tan A = \frac{\sin A}{\cos A} = \frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}} = \frac{\sqrt{3}}{3}$

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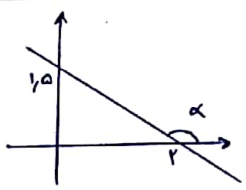
$\underbrace{\frac{1}{\sqrt{\cos^2\alpha}}}_{\frac{1}{|\cos\alpha|}} - \tan\alpha = \frac{1+\sin\alpha}{|\cos\alpha|} \rightarrow \frac{1}{|\cos\alpha|} - \frac{\sin\alpha}{\cos\alpha} = \frac{1}{|\cos\alpha|} + \frac{\sin\alpha}{|\cos\alpha|} \rightarrow \frac{-\sin\alpha}{\cos\alpha} = \frac{\sin\alpha}{|\cos\alpha|} \Rightarrow \cos\alpha < 0$

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

$\cos\alpha < 0 \;,\; \sin\alpha < 0 \Rightarrow$ ناحیه سوم

۴



$y = ax + b \rightarrow b = 1/5 \qquad \begin{vmatrix} 2 \\ 0 \end{vmatrix} \Rightarrow 0 = 2a + 1/5 \Rightarrow a = -\frac{3}{4} \rightarrow \tan\alpha = -\frac{3}{4}$

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

۵

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

$\frac{-5\sin(22)}{-2\sin(22)} = \frac{5}{2} = 2/5$

۶

$\cos\alpha \to \sin\alpha < 0 \ , \cos\alpha > 0$ $\quad \sin^2\alpha + \cos^2\alpha = 1 \Rightarrow \sin^2\alpha + \frac{4}{9} = 1 \Rightarrow \sin\alpha = -\frac{\sqrt{5}}{3}$

$$\frac{\sin(\frac{\pi}{2}+\alpha) - \sin(\alpha-\pi)}{|\tan^2\alpha - 1|} = \frac{\cos(\alpha) + \sin(\alpha)}{|\frac{1}{\cos^2\alpha} - 2|} = \frac{\frac{2}{3} + (-\frac{\sqrt{5}}{3})}{|\frac{1}{\frac{4}{9}} - 2|} = \frac{\frac{2-\sqrt{5}}{3}}{\frac{1}{4}} = \boxed{\frac{8-4\sqrt{5}}{3}}$$

$\hookrightarrow 1 + \tan^2\alpha = \frac{1}{\cos^2\alpha} \Rightarrow \tan^2\alpha = \frac{1}{\cos^2\alpha} - 1$

$\frac{9}{4} - \frac{8}{4} \cdot \frac{1}{4}$

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$\sin\alpha = 2\cos\alpha \qquad \sin^2\alpha + \cos^2\alpha = 1 \to (2\cos\alpha)^2 + \cos^2\alpha = 1 \Rightarrow 5\cos^2\alpha = 1 \to \cos^2\alpha = \frac{1}{5}$

α در ناحیه سوم $\Rightarrow \sin\alpha < 0 \ , \cos\alpha < 0 \Rightarrow \cos\alpha = -\frac{1}{\sqrt{5}} = \boxed{\frac{-\sqrt{5}}{5}}$

۸

$2mx + (m^2-1)y = 3 \to$ شیب $= \frac{-\text{ضریب } x}{\text{ضریب } y} = \frac{-2m}{m^2-1}$

شیب خط $= \tan\alpha = \tan 60^\circ = \sqrt{3} \to \frac{-2m}{m^2-1} = \sqrt{3} \to \sqrt{3}m^2 - \sqrt{3} = -2m \Rightarrow \sqrt{3}m^2 + 2m - \sqrt{3} = 0$

$\xrightarrow{\text{حل}} m^2 + 2m - 3 = 0 \Rightarrow m = \frac{1}{\sqrt{3}}, \frac{-3}{\sqrt{3}}$

اختلاف مقادیر m $= |\frac{1}{\sqrt{3}} - (\frac{-3}{\sqrt{3}})| = \boxed{\frac{4}{\sqrt{3}}}$

۹

$\tan(\frac{\pi}{4} - x) = \frac{1-m}{2+m} \qquad \frac{-\pi}{4} < x < \frac{\pi}{4} \xrightarrow{\times(-)} \frac{\pi}{4} > -x > \frac{-\pi}{4} \xrightarrow{+\frac{\pi}{2}} \frac{\pi}{2} > \frac{\pi}{4} - x > 0$

$\to \tan(\frac{\pi}{4} - x) > 0 \to \frac{1-m}{2+m} > 0$ $\quad \begin{array}{ccccc} & -2 & & 1 & \\ - & \not\exists & + & 0 & - \end{array} \to \boxed{m \in (-2, 1)}$

۱۰

$\tan(30^\circ)\cos(210^\circ) + \tan(420^\circ)\sin(840^\circ) \to \tan(270^\circ + 30^\circ)\cos(180^\circ + 30^\circ) + \tan(90^\circ + 30^\circ)\sin(90^\circ + 30^\circ)$

$(30^\circ = \frac{\pi}{6} = \alpha)$

$= \tan(\frac{3\pi}{2} + \alpha)\cos(\pi + \alpha) + \tan(\frac{\pi}{2} + \alpha)\sin(\frac{\pi}{2} + \alpha) =$

$(-\cot\alpha)(-\cos\alpha) + (-\cot\alpha)(\cos\alpha) \xrightarrow[\cot\alpha = \sqrt{3}]{\cos\alpha = \frac{\sqrt{3}}{2}}$

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