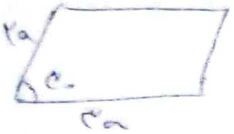
نام و نام خانوادگی : آیین عظیمی — ردیف : ۲۶ — کلاس : یازدهم ریاضی



$S = AB \cdot AC \sin 30 \rightarrow 2a \times 3a \times \frac{1}{2} = 54$

$3a^2 = 54 \rightarrow a^2 = 18$

$a = 3\sqrt{2}$

$2a = 6\sqrt{2}$

$3a = 9\sqrt{2}$

محیط $= 2(15\sqrt{2}) = \boxed{30\sqrt{2}}$

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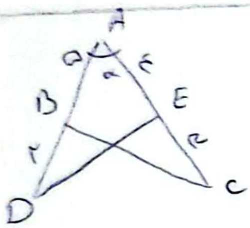

$S_{\overset{\triangle}{ABC}} = \frac{1}{2} \cdot AC \cdot AB \cdot \sin\alpha = \frac{1}{2} \times 7 \times 5 \times \sin\alpha = 17{,}5 \sin\alpha$

$S_{\overset{\triangle}{ADE}} = \frac{1}{2} AD \cdot AE \cdot \sin\alpha = \frac{1}{2} \times 7 \times 4 \times \sin\alpha = 14 \sin\alpha$

اختلاف $= 3{,}5 \sin\alpha = 1{,}75$

$\sin\alpha = 0{,}5 \xrightarrow{\alpha = 30} \boxed{\tan\alpha = \frac{\sqrt{3}}{3}}$

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$\frac{1}{\sqrt{\cos^2\alpha}} - \tan\alpha = \frac{1+\sin\alpha}{|\cos\alpha|} \rightarrow \frac{\cancel{1}}{|\cos\alpha|} - \tan\alpha = \frac{\cancel{1}}{|\cos\alpha|} + \frac{\sin\alpha}{|\cos\alpha|} \rightarrow -\tan\alpha = \frac{\sin\alpha}{|\cos\alpha|}$ $\quad$ I: $\sin\alpha < 0$, $|\cos\alpha| > 0$

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

$-\tan\alpha < 0$

$\tan\alpha > 0$ II

$\begin{cases} \sin\alpha < 0 \\ \tan\alpha > 0 \end{cases} \rightarrow$ ناحیه ۳

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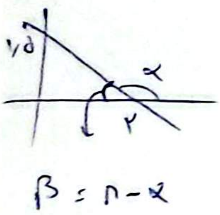

$\beta = \pi - \alpha$

$\tan\left(\frac{\pi}{2} - \alpha\right) = \frac{1}{\tan\alpha}$ → tan ۲ زاویه متمم معکوس یکدیگراست

$\tan\alpha = -\tan(\overset{\beta}{\pi - \alpha})$ → tan دو زاویه مکمل قرینه یکدیگراست

$\tan\alpha = -\tan\beta$

$\tan\alpha = -\frac{1{,}5}{2} = -\frac{3}{4}$

$\rightarrow \tan\left(\frac{\pi}{2} - \alpha\right) = \frac{1}{-\frac{3}{4}} = \boxed{-\frac{4}{3}}$

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$\frac{3\cos(248) - 2\sin(158)}{\sin(202) - \cos(292)} = \frac{3\cos\left(\frac{3\pi}{2} - 22\right) - 2\sin(\pi - 22)}{\sin(\pi + 22) - \cos\left(\frac{3\pi}{2} + 22\right)} = \frac{-3\sin(22) - (2\sin(22))}{-\sin(22) - \sin(22)}$

$= \frac{-5\,\cancel{\sin 22}}{-2\,\cancel{\sin 22}} = 2{,}5$

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$\alpha \to (4)$ $\qquad \sin\alpha = -\frac{\sqrt{5}}{3}$

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

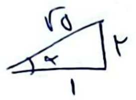
$\to \tan\alpha = -\frac{\sqrt{5}}{2}$

$$\frac{\sin(\frac{\pi}{2}+\alpha) - \sin(\alpha - \pi)}{|\tan^2\alpha - 1|} = \frac{\cos\alpha + \sin\alpha}{|\tan^2\alpha - 1|} = \frac{\frac{2}{3} - \frac{\sqrt{5}}{3}}{|\frac{5}{4} - 1|} = \frac{\frac{2-\sqrt{5}}{3}}{+\frac{1}{4}} = \boxed{\frac{+4(2-\sqrt{5})}{3}}$$ 6

$\sin\alpha = 2\cos\alpha$ $\qquad \to \sin^2\alpha + \cos^2\alpha = 1$

$\alpha \to (3)$ $\qquad 4\cos^2\alpha + \cos^2\alpha = 1$

$\cos\alpha = ?$ $\qquad 5\cos^2\alpha = 1 \to \cos^2\alpha = \frac{1}{5} \to \boxed{\cos\alpha = -\frac{1}{\sqrt{5}}}$ 7



$2mx + (m^2-1)y = 3$

شیب : $\tan 60 = \sqrt{3}$

$\} \to$ شیب $= \frac{-2m}{m^2-1} = \sqrt{3} \to -2m = \sqrt{3}m^2 - \sqrt{3}$

$\sqrt{3}m^2 + 2m - \sqrt{3} = 0$

اختلاف مقادیر $m = \frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{4+12}}{\sqrt{3}} = \boxed{\frac{4}{\sqrt{3}}}$ 8

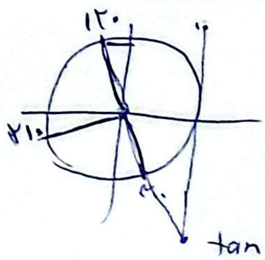
$-\frac{\pi}{4} < x < \frac{\pi}{4}$ $\qquad \tan(\frac{\pi}{4} - x) = \frac{1-m}{2+m}$

$\frac{\pi}{4} > -x > -\frac{\pi}{4}$ $\qquad \Big\} \frac{1-m}{2+m} > 0$

$\boxed{\frac{\pi}{2} > \frac{\pi}{4} - x > 0} \to \tan(\frac{\pi}{4} - x) > 0$ 9

$\begin{array}{cccc} & -2 & & 1 \\ - & \cancel{+} & + & - \end{array} \to \boxed{m \in (-2, 1)}$

$$\underbrace{\tan(300)}_{-\sqrt{3}} \; \underbrace{\cos(210)}_{-\frac{\sqrt{3}}{2}} + \underbrace{\tan(480)}_{\underbrace{\tan(120)}_{-\sqrt{3}}} \; \underbrace{\sin(840)}_{\underbrace{\sin(120)}_{\frac{\sqrt{3}}{2}}}$$ 10



$\tan 300 = \tan 120$

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