$\cos\alpha = \frac{2}{3}$ $\quad 1-\cos^2\alpha = 1-\frac{4}{9} = \frac{5}{9} = \sin^2\alpha \rightarrow \sin\alpha = -\frac{\sqrt{5}}{3}$

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

$\tan\alpha = \frac{\sin\alpha}{\cos\alpha} = \frac{-\frac{\sqrt{5}}{3}}{\frac{2}{3}} = \frac{-\sqrt{5}}{2}$

(4)

$\sin\alpha = 2\cos\alpha$ $\quad 4\cos^2\alpha + \cos^2\alpha = 5\cos^2\alpha = 1$ $\quad \cos\alpha = \frac{-1}{\sqrt{5}}$

$\sin\alpha = \frac{-2}{\sqrt{5}}$

(7)

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

$\therefore m = \frac{-2m}{m^2-1} = \tan 60^\circ = \sqrt{3}$

$\sqrt{3} - \left(\frac{-1}{\sqrt{3}}\right) = \frac{4}{\sqrt{3}}$

(8)

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

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

$(m'-1)(m'+1) = 0$ $\quad \rightarrow m' = -1 \rightarrow \frac{-1}{\sqrt{3}} = m$

$\rightarrow m' = 3 \rightarrow \sqrt{3} = m$

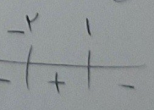
$\frac{-\pi}{4} < x < \frac{\pi}{4}$

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

$\frac{\pi}{2} > \frac{\pi}{4} - x > 0$

$+\infty > \tan\left(\frac{\pi}{4} - x\right) > 0$ $\quad +\infty > \frac{1-m}{2+m} > 0$

$-2 < m < 1$

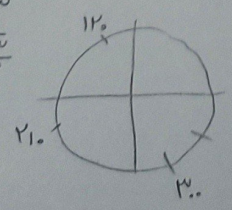


(9)

$\tan(300)\cos(210) + \frac{\tan(480)}{\tan(120)}\frac{\sin(840)}{\sin(120)} = \left(-\sqrt{3}\right)\left(-\frac{\sqrt{3}}{2}\right) + \left(-\sqrt{3}\right)\left(\frac{\sqrt{3}}{2}\right) = 0$

$\tan(300) = -\sqrt{3}$

$\cos(210) = \frac{-\sqrt{3}}{2}$



$\tan(120) = \sqrt{3}$

$\sin(120) = \frac{\sqrt{3}}{2}$

(10)

(تکلیف ۲۶)　　　(فاطمه شکرانی)　　　(یازدهم ریاضی B)

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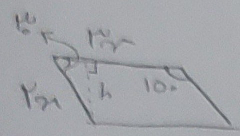

ضلع روبه‌رو به زاویه ۳۰ درجه نصف وتر → $h = \frac{2x}{2} = x$

$S = \frac{3x \times x}{2} = 27 \to x = \sqrt{18}$　　محیط $= (2x + 3x)2 = 10x = 10\sqrt{18}$

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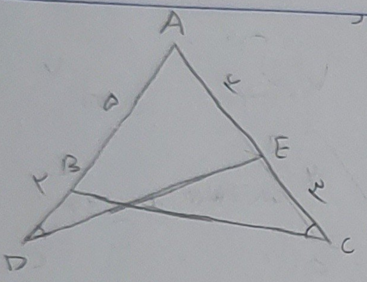


$S = \frac{1}{2} ab \sin\alpha$

$S_{ABC} = \frac{1}{2} \times 5 \times 7 \times \sin A = \frac{35}{2} \sin A$ و $S_{ADE} = \frac{1}{2} \times 7 \times 4 \times \sin A = 14 \sin A$

$S_{ABC} - S_{BDE} = 3/5 \sin A = 1/75$

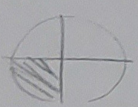
$\sin A = \frac{1}{2} \to A = 30°$

$\tan 30 = \frac{\sqrt{3}}{3}$

۳

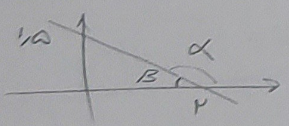
$\frac{|\sin\alpha|}{\cos\alpha} = \frac{-1}{\cot\alpha}$　　$\frac{1}{\sqrt{\cos^2\alpha}} - \tan\alpha = \frac{1+\sin\alpha}{|\cos\alpha|}$

$\frac{|\sin\alpha|}{\cos\alpha} = \frac{-\sin\alpha}{\cos\alpha} \to \sin\alpha < 0$　　$\frac{1}{|\cos\alpha|} - \frac{\sin\alpha}{\cos\alpha} = \frac{1+\sin\alpha}{|\cos\alpha|} \to \cos\alpha < 0$



α در ناحیه سوم است

۴



$\cot\beta = \frac{2}{1/5}$

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

$\cot\alpha = \cot(\pi - \beta) = -\cot\beta = -\frac{2}{1/5}$

۵

$\frac{3\cos(248) - 2\sin(158)}{\sin(202) - \cos(292)} = \frac{-3\sin(22) - 2\sin(22)}{-\sin(22) - \sin(22)} = \frac{-5}{-2} = 2/5$

$\cos(248) = \cos(\frac{3\pi}{2} - 22) = -\sin(22)$

$\sin(158) = \sin(\pi - 22) = \sin(22)$

$\sin(202) = \sin(\pi + 22) = -\sin(22)$

$\cos(292) = \cos(\frac{3\pi}{2} + 22) = +\sin(22)$