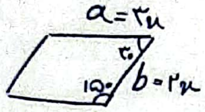
پرنیان پیامی — یازدهم تجربی

19

① (6)



$S_{\square} = ab\sin\theta$

$\Rightarrow 2x \times 3x \times \underbrace{\sin 30}_{\frac{1}{2}} = 54 \Rightarrow 3x^2 = 54 \Rightarrow x^2 = 18$

$\Rightarrow x = 3\sqrt{2} \Rightarrow \begin{cases} a = 9\sqrt{2} \\ b = 6\sqrt{2} \end{cases}$

محیط $\square$ $= (9\sqrt{2} + 6\sqrt{2}) \times 2 = 30\sqrt{2}$

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② (6)

$S_{\triangle ABC} - S_{\triangle ADE} = 1/75 \Rightarrow (\frac{1}{2} \times 5 \times 7 \times \sin A) - (\frac{1}{2} \times 4 \times 7 \times \sin A) = 1/75$

$\Rightarrow \frac{35}{2}\sin A - \frac{28}{2}\sin A = 1/75 \Rightarrow \sin A = \frac{1}{2} \Rightarrow 1 - \sin^2\theta = \cos^2\theta \Rightarrow 1 - \frac{1}{4} = \frac{3}{4} \Rightarrow \cos^2\theta = \frac{3}{4}$

$\Rightarrow 1 + \tan^2\theta = \frac{1}{\cos^2\theta} \Rightarrow 1 + \tan^2\theta = \frac{4}{3} \Rightarrow \tan^2\theta = \frac{1}{3} \Rightarrow \tan\theta = \frac{\sqrt{3}}{3}$

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③ (1)

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

$\Rightarrow \frac{1+\sin\alpha-1}{|\cos\alpha|} = \frac{\sin\alpha}{\cos\alpha} \Rightarrow \frac{1}{|\cos\alpha|} = \frac{1}{\cos\alpha} \Rightarrow \cos\alpha > 0$

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

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

$\Rightarrow \sin\alpha < 0 \Longrightarrow$ ~~۴ (ربع چهارم)~~ سوم

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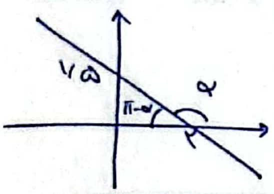
④ (6)



$\tan(\pi - \alpha) = \frac{1/5}{2} = -\frac{3}{4}$

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

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⑤ (6)

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

$= \frac{-3\sin 22 - 2\sin 22}{-\sin 22 - \sin 22} = \frac{-5\sin 22}{-2\sin 22} = \frac{5}{2} = 2/5$

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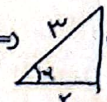
⑥ (6)

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

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



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

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

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⑦ (6)

$\sin\alpha = 2\cos\alpha$

$\alpha \longrightarrow$ (ربع سوم) $\longrightarrow \begin{vmatrix} -\cos\alpha \\ -\sin\alpha \end{vmatrix}$

$\sin^2\alpha + \cos^2\alpha = 1 \Rightarrow 4\cos^2\alpha + \cos^2\alpha = 1 \Rightarrow$

$5\cos^2\alpha = 1 \Rightarrow \cos^2\alpha = \frac{1}{5} \rightarrow \cos\alpha = -\frac{\sqrt{5}}{5}$

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

$\tan 60 = \sqrt{3}$

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

$\Rightarrow \sqrt{3}m^2 + 2m - \sqrt{3} = 0 \Rightarrow \sqrt{\Delta} = \sqrt{4+12} = \sqrt{16} = 4$

$\Rightarrow m = \frac{-2 \pm 4}{2\sqrt{3}} \Rightarrow \begin{cases} \frac{2}{2\sqrt{3}} = \frac{1}{\sqrt{3}} \\ \frac{-6}{2\sqrt{3}} = -\frac{3}{\sqrt{3}} \end{cases}$ → اختلاف $= \frac{1}{\sqrt{3}} - \left(-\frac{3}{\sqrt{3}}\right) = \frac{4}{\sqrt{3}}$

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$-\frac{\pi}{4} < x < \frac{\pi}{4} \Rightarrow -\frac{\pi}{4} < -x < \frac{\pi}{4} \xrightarrow{+\frac{\pi}{4}} 0 < \frac{\pi}{4} - x < \frac{\pi}{2}$

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

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	-2		1	
	$-$	$+$		$-$

$\Rightarrow m \in (-2, 1)$

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$\tan(300)\cos(210) + \tan(480)\sin(840) = ?$

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$\tan(360-60)\cos(270-60) + \tan(180-60)\sin(180-60) = (-\tan 60)(-\sin 60) + (-\tan 60)(\sin 60)$

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