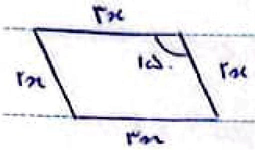
آزمون شاپا دی یازدهم دفتر A تألیف شماره ۲۶

۱-



$\rightarrow (2x)(3x)\sin 150^\circ = 54 \rightarrow x^2 = \frac{54}{3} = 18 \rightarrow x = \sqrt{18}$

محیط: $2(2x+3x) = 10x \rightarrow 10(\sqrt{18}) = 10\sqrt{18} = 30\sqrt{2}$

۲-

$(\frac{1}{2}\times 5\times 7\times \sin A) - (\frac{1}{2}\times 7\times 4\times \sin A) = 1.75 \rightarrow \frac{35}{2}\sin A - \frac{28}{2}\sin A = 1.75$

$\rightarrow \frac{7}{2}\sin A = \frac{7}{4} \rightarrow \sin A = \frac{1}{2} \rightarrow \hat{A} = 30^\circ \quad \tan\hat{A} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

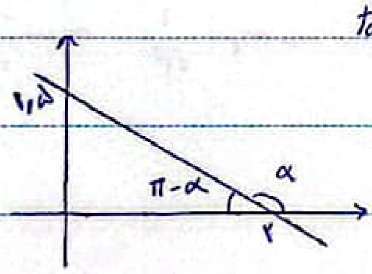
۳-

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

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

$\rightarrow \alpha$: ناحیه سوم

۴-



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

$\tan(\pi-\alpha) = \frac{1.5}{2} = \frac{3}{4} \rightarrow \tan\alpha = \frac{-3}{4}$

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

۵-

$\frac{3\cos(248) - 2\sin(158)}{\sin(202) - \cos(292)} = \frac{3\cos(360-112) - 2\sin(270-112)}{\sin(90+112) - \cos(180+112)} = \frac{3\cos(-112) - 2\cos(112)}{\cos(-112) - (-\cos(112))}$

$\rightarrow \frac{3\cos(112) - 2\cos(112)}{\cos(112) + \cos(112)} = \frac{\cos(112)}{2\cos(112)} = \frac{1}{2}$

Subject. Day. Month. Year.

۶- $\frac{\sin\left(\frac{\pi}{2}+\alpha\right)-\sin(\alpha-\pi)}{|\tan^2\alpha-1|} \cdot \frac{\sin\left(\frac{\pi}{2}+\alpha\right)-(-\sin(\pi-\alpha))}{|\tan^2\alpha-1|}$

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

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

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

$= \frac{\frac{-\sqrt{5}}{3}+\frac{2}{3}}{\left|\frac{5}{4}-1\right|} = \frac{\frac{2-\sqrt{5}}{3}}{\frac{1}{4}} = \frac{4(2-\sqrt{5})}{3} = \frac{8-4\sqrt{5}}{3}$

۷- فرض کنید $\alpha \rightarrow \cos\alpha$ ←

$\sin^2\alpha+\cos^2\alpha=1 \quad \sin\alpha=2\cos\alpha \rightarrow 4\cos^2\alpha+\cos^2\alpha=1 \rightarrow 5\cos^2\alpha=1$

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

۸- $m=\tan 60^\circ=\sqrt{3}$ ، $m=\frac{-a}{b} \rightarrow -\frac{2m}{m^2-1}=\sqrt{3}$

$\rightarrow \sqrt{3}m^2+2m-\sqrt{3}=0 \quad \Delta=16 \quad m=\frac{-2\pm 4}{2\sqrt{3}} \rightarrow m_1=\frac{1}{\sqrt{3}} \quad m_2=\frac{-3}{\sqrt{3}}$

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

۹- $\tan\left(\frac{\pi}{4}-\alpha\right)=\frac{1-m}{2+m} \rightarrow \tan(\alpha)=\frac{1-m}{2+m} \quad -\frac{\pi}{4}<\alpha<\frac{\pi}{4}$

$\rightarrow -1<\tan\alpha<1 \rightarrow -1<\frac{1-m}{2+m}<1 \rightarrow -1<\frac{1-m}{2+m} \rightarrow 0<\frac{3}{2+m}$

$\frac{1-m}{2+m}<1 \rightarrow \frac{-1-2m}{2+m}<0$

	-2		$-\frac{1}{2}$	
$-1-2m$	+	+	0	−
$2+m$	−	0	+	+
$\frac{-1-2m}{2+m}$	−	∄	+	−

$\rightarrow D=(-2,-\frac{1}{2})$

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١- $\tan(٣٠٠) = \tan(٣٦٠ - ٦٠) = -\tan ٦٠ = -\sqrt{٣}$ الربع الرابع

$\cos(٢١٠) = \cos(١٨٠ + ٣٠) = -\cos ٣٠ = -\frac{\sqrt{٣}}{٢}$ الربع الثالث

$\tan(٤٨٠) = \tan(٥ \times ٣٦٠ - ٦٠) = -\tan ٦٠ = -\sqrt{٣}$ الربع الرابع

$\sin(٨٤٠) = \sin(٩٠٠ - ٦٠) = \sin ٦٠ = \frac{\sqrt{٣}}{٢}$ الربع الثاني

$(-\sqrt{٣})(-\frac{\sqrt{٣}}{٢}) + (-\sqrt{٣})(\frac{\sqrt{٣}}{٢}) = \frac{٣}{٢} - \frac{٣}{٢} = ٠$