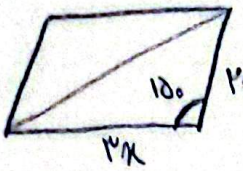
نام و نام خانوادگی: امیرحسین خاشعی کلاس: یازدهم پسر B شماره تکلیف: ۲۶

①



$$\text{مساحت مثلث} = \frac{1}{2} \times 2x \times 3x \times \sin 150^\circ = \frac{3}{2}x$$

$$\text{مساحت متوازی‌الاضلاع} = 2 \times \frac{3}{4}x = 3x = 6 \Rightarrow x = 2$$

$$\text{محیط} = 2x(2x + 3x) = 10x = 180 \rightarrow \text{جواب}$$

②

$$S_{ABC} = \frac{1}{2} \times 5 \times 7 \times \sin A = 17.5 \sin A$$
$$S_{ADE} = \frac{1}{2} \times 4 \times 2 \times \sin A = 4 \sin A$$
$$\ominus \rightarrow 13.5 \sin A = 17.5$$
$$\sin A = \frac{1}{2} \rightarrow A = \frac{\pi}{6}$$
$$\tan \frac{\pi}{6} = \frac{1}{\sqrt{3}} \rightarrow \text{جواب}$$

③

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

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

جواب ← ناحیه سوم

④

$$\text{استفاده از شیب خط} = \frac{\Delta y}{\Delta x} = \frac{-1.5}{2} = -\frac{3}{4} = \tan \alpha$$

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

⑤

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

$$= \frac{-5\sin 22^\circ}{-2\sin 22^\circ} = 2.5 \rightarrow \text{جواب}$$

⑥

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

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

$$= \frac{8 - 4\sqrt{5}}{3} \rightarrow \text{جواب}$$

⑦

$$\sin \alpha = 2\cos \alpha \longrightarrow \sin^2 \alpha + \cos^2 \alpha = 1 \longrightarrow 4\cos^2 \alpha + \cos^2 \alpha = 1 \longrightarrow \cos^2 \alpha = \frac{1}{5}$$

$$\cos \alpha = \frac{-1}{\sqrt{5}} \rightarrow \text{جواب}$$

(۸)

$2mx - (m^2-1)y = 4$ شیب خط $= \frac{-2m}{-m^2+1} = \frac{2m}{m^2-1} = \tan 60^\circ = \sqrt{3}$

$\sqrt{3}m^2 - \sqrt{3} = 2m \rightarrow \sqrt{3}m^2 - 2m - \sqrt{3} = 0$ اختلاف مقادیر $m = \frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{16}}{\sqrt{3}} = \frac{4\sqrt{3}}{3}$

$\Delta = b^2 - 4ac = 4 - 4(\sqrt{3})(-\sqrt{3}) = 16$

جواب

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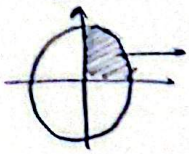
(۹)

$\frac{-\pi}{4} < x < \frac{\pi}{4} \xrightarrow{\times(-1)} \frac{-\pi}{4} < -x < \frac{\pi}{4} \xrightarrow{+\frac{\pi}{2}} 0 < \frac{\pi}{2} - x < \frac{\pi}{2} \Rightarrow A = \frac{\pi}{2} - x$



$0 < \tan A < +\infty$

$\frac{1-m}{2+m} > 0$

	-2		1
$1-m$	$+$	$+$	0 $-$
$2+m$	0 $-$	$+$	$+$
		$\cup$	

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

جواب

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(۱۰)

$\underbrace{\tan(240^\circ)}_{\tan 60^\circ} \underbrace{\cos(210^\circ)}_{-\cos 30^\circ} + \underbrace{\tan(420^\circ)}_{\tan 60^\circ} \underbrace{\sin(150^\circ)}_{\sin 30^\circ}$

$-\cot 30^\circ \times -\sin 90^\circ + \tan 60^\circ \times \sin 30^\circ$

$\left(-\sqrt{3} \times \frac{-\sqrt{3}}{2}\right) + \left(-\sqrt{3} \times \frac{1}{2}\right) = 0$ ← جواب