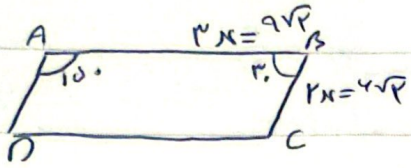
عسل طاهری — یازدهم ریاضی — ۲۵

سوال ۱ ←



$S_{ABCD} = AB \times BC \times \sin B \rightarrow (3x)(2x) \times \frac{1}{2} = 45$

$\rightarrow 6x^2 = 180 \rightarrow x^2 = 15 \rightarrow x = 3\sqrt{2}$ ✓

$\rightarrow P_{ABCD} = (9\sqrt{2} + 6\sqrt{2}) \times 2 = \boxed{30\sqrt{2}}$

سوال ۲ ←

$S_{ABC} = \frac{AC \times AB \times \sin A}{2} = \frac{35}{2}\sin A$

$S_{ADE} = \frac{AE \times AD \times \sin A}{2} = \frac{14}{2}\sin A$

$\xrightarrow{-} 1,75 \rightarrow \frac{7}{2}\sin A = 1,75 \rightarrow \sin A = \frac{1}{2}$ ✓

$\rightarrow 1 + \cot^2 A = \frac{1}{\sin^2 A} \rightarrow \cot A \begin{cases} \rightarrow \sqrt{3} \checkmark \rightarrow \text{چون حاده است} \\ \rightarrow -\sqrt{3} \times \end{cases}$

$\rightarrow \boxed{\tan A = \frac{\sqrt{3}}{3}}$

سوال ۳ ←

$\frac{1}{\sqrt{\cos^2 a}} - \tan a = \frac{1+\sin a}{|\cos a|} \rightarrow \frac{1}{|\cos a|} - \frac{1+\sin a}{|\cos a|} = \tan a$ ✓

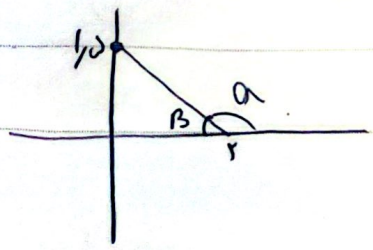
$\rightarrow -\frac{\sin a}{|\cos a|} = \frac{\sin a}{\cos a} \rightarrow \cos a < 0$ ①

$\frac{|\sin a|}{\cos a} = -\frac{1}{\cot a} \rightarrow \frac{|\sin a|}{\cos a} = -\tan a \rightarrow \frac{|\sin a|}{\cos a} = \frac{-\sin a}{\cos a}$

$|\sin a| = -\sin a \leftarrow$ ② $\sin a < 0$

① و ② ← در ناحیه سوم قرار دارد

سوال ۴ ←



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

$\tan\beta = m_{AB} \rightarrow \tan\beta = \frac{1,5}{2} = -\frac{3}{4}$ ✓

$\rightarrow \tan\alpha = \frac{3}{4}$

$$\tan\left(\frac{\pi}{2}-\alpha\right) \rightsquigarrow -\cot\alpha \rightsquigarrow \boxed{-\frac{\varepsilon}{\mu}}$$

سوال ۴ ←

$$\frac{3\cos(\pi+48)-2\sin\left(\frac{\pi}{2}+48\right)}{\sin\left(\frac{3}{2}\pi-48\right)-\cos(2\pi-48)} = \frac{-3\cos 48-2\cos 48}{-\cos 48-\cos 48} = \frac{-5\cos 48}{-2\cos 48} = \boxed{\frac{5}{2}}$$

سوال ۵ ←

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

$$\sin^2\alpha+\cos^2\alpha=+1 \longrightarrow \frac{4}{9}+\sin^2\alpha=1 \rightsquigarrow \sin^2\alpha=\frac{5}{9} \rightarrow \begin{cases}\sin\alpha=-\frac{\sqrt{5}}{3}\\ \sin\alpha=\frac{\sqrt{5}}{3}\end{cases}$$

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

سوال ۶ ←

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

$$\sin^2\alpha+\cos^2\alpha = (2\cos\alpha)^2+\cos^2\alpha = 5\cos^2\alpha = 1 \rightarrow \boxed{\cos\alpha = -\frac{\sqrt{5}}{5}}$$

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

سوال ۷ ←

$$\tan 45 = \frac{\text{شیب خط}}{1} \rightarrow \sqrt{3} = \text{شیب خط}$$

$$2mx+(m^2-1)y=3 \longrightarrow \frac{2m}{1-m^2}=\sqrt{3} \longrightarrow -\sqrt{3}m^2+\sqrt{3}=2m$$

$$\longrightarrow \sqrt{3}m^2+2m-\sqrt{3}$$

$$\text{اختلاف نمایندگی} = \frac{\sqrt{\Delta}}{|m|} \rightarrow \sqrt{4-4(\sqrt{3})(-\sqrt{3})} = \frac{\sqrt{16}}{\sqrt{3}} = \frac{4}{\sqrt{3}} = \boxed{\frac{4\sqrt{3}}{3}}$$

سوال ۹ ←

$$-\frac{\pi}{4}<x<\frac{\pi}{4} \rightarrow -\frac{\pi}{4}<-x<+\frac{\pi}{4} \xrightarrow{+\frac{\pi}{2}} \frac{\pi}{4}<\frac{\pi}{2}-x<\frac{3\pi}{4}$$

$$\rightarrow \tan\left(\frac{\pi}{2}-x\right)>0 \rightarrow \frac{1-m}{2+m}>0 \longrightarrow m\in(-2,1)$$

سوال ۱ ←

$\tan(300^\circ)\cos(210^\circ)+\tan(480^\circ)\sin(480^\circ)$

$\longrightarrow \tan(300^\circ)\cos(210^\circ)+\tan(120^\circ)\sin(120^\circ) \longrightarrow (-\sqrt{3})(-\frac{\sqrt{3}}{2})+(-\sqrt{3})(\frac{\sqrt{3}}{2})$

$\longrightarrow +\frac{3}{2}+(-\frac{3}{2}) =$  ۰