۲۰ عالی

پاسخ تشریحی امتحان فصل ۲ B

۱) الف) $\tan(3\pi-\frac{\pi}{4})+\sin(4\pi-\frac{\pi}{4})\times\cos(3\pi+\frac{\pi}{4})$

$=-\tan(\frac{\pi}{4})+(-\sin(\frac{\pi}{4}))(-\cos(\frac{\pi}{4}))=-1+\frac{1}{2}=\boxed{-\frac{1}{2}}$ ۲

ب) $\tan(3\pi-\frac{\pi}{6})\times\sin(4\pi-\frac{\pi}{3})+\cos(3\pi+\frac{\pi}{3})\rightarrow(-\tan(\frac{\pi}{6}))\times(-\sin(\frac{\pi}{3}))$

$-\cos(\frac{\pi}{3})=\frac{1}{2}-\frac{1}{2}=\boxed{0}$

۲) عبارت بر $\sin\alpha$ تقسیم $\Rightarrow \frac{3\cot\alpha-1}{\cot\alpha+1}=\frac{3(4)-1}{4+1}=\frac{11}{5}=\boxed{2/2}$ ۲

۳) $\sin^2\alpha+\cos^2\alpha=1\rightarrow(2\cos\alpha)^2+\cos^2\alpha=1\rightarrow 4\cos^2\alpha+\cos^2\alpha=1$

$5\cos^2\alpha=1\rightarrow\cos^2\alpha=\frac{1}{5}\rightarrow\cos\alpha\left\langle\begin{array}{l}+\frac{1}{\sqrt5}\\ \boxed{-\frac{1}{\sqrt5}}\end{array}\right.$ قابل قبول ۲

۴) الف) $\cos(2\pi+\frac{3\pi}{4}+\alpha)\rightarrow\cos(\frac{3\pi}{4}+\alpha)\rightarrow\cos\frac{3\pi}{4}\times\cos\alpha-\sin\frac{3\pi}{4}\times\sin\alpha$

$\cos\alpha=-\sqrt{1-\sin^2\alpha}\rightarrow\cos\alpha=-\sqrt{1-\frac{1}{50}}=\frac{-7}{\sqrt{50}}=\frac{-7}{5\sqrt2}\rightarrow(-\frac{\sqrt2}{2}\times\frac{-7}{5\sqrt2})-\frac{\sqrt2}{2}\times\frac{1}{5\sqrt2}=\frac{7}{10}-\frac{1}{10}=\frac{6}{10}=\frac{3}{5}$

ب) $\sin(2\pi+\frac{5\pi}{4}+\alpha)=\sin(\frac{5\pi}{4}+\alpha)\rightarrow\sin\frac{5\pi}{4}\times\cos\alpha+\sin\alpha\times\cos\frac{5\pi}{4}$

$-\frac{\sqrt2}{2}\times\frac{7}{5\sqrt2}+\frac{1}{5\sqrt2}\times-\frac{\sqrt2}{2}=-\frac{8}{10}=-\frac{4}{5}$

$\underbrace{}_{-\frac{7}{10}}\quad\underbrace{}_{-\frac{1}{10}}$

$\left\{\begin{array}{l}\sin\alpha=\frac{1}{5\sqrt2}\\ \tan^2+1=\frac{1}{\cos^2}\rightarrow\cos=\frac{7}{5\sqrt2}\end{array}\right.$

۵) $\sin^2\alpha=1-\cos^2\alpha\longrightarrow 2(1-\cos^2\alpha)+\cos^2\alpha=\frac{4}{3}$ ۲

$\cos^2\alpha=\frac{2}{3}\qquad 1+\tan^2\alpha=\frac{1}{\cos^2\alpha}\Rightarrow 1+\tan^2\alpha=\frac{3}{2}\rightarrow\tan^2\alpha=\frac{1}{2}$

۶) $S_{\text{مثلث}}=\frac{1}{2}\times6\times\sqrt{4}\times\sin\alpha=4/5\rightarrow 3\sqrt3\sin\alpha=4/5\quad\sin\alpha=\frac{4/5}{3\sqrt3}=\frac{\sqrt3}{2}$

$\longrightarrow\alpha\left\langle\begin{array}{l}60^\circ\\120^\circ\end{array}\right.\longrightarrow\frac{120^\circ}{60^\circ}=\boxed{2}$ ۲

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$(\frac{1}{2} \times 3m \times 3\sqrt{2}... \times \sin 150^\circ) \times 2 = 54$

$\frac{1}{2}$

$3m^2 = 54 \longrightarrow m = \sqrt{18}$

محیط $= (2\sqrt{18} + 3\sqrt{18}) \times 2 = 10\sqrt{18}$

$= 30\sqrt{2}$

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$S_{ABC} = \frac{1}{2} \times 5 \times 7 \times \sin\hat{A} = \frac{35}{2}\sin\hat{A} = 17/5 \sin\hat{A}$

$S_{ADE} = \frac{1}{2} \times 4 \times 7 \times \sin\hat{A} = 14\sin\hat{A}$

$3/5 \sin\hat{A} = 1/75$

$\Longrightarrow \underbrace{\sin\hat{A} = \frac{1}{2}}_{\hat{A} = 30^\circ \angle \cancel{150^\circ}} \longrightarrow \tan 30^\circ = \frac{\sqrt{3}}{3} = \frac{1}{\sqrt{3}}$

حاده

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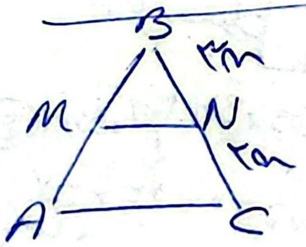

$\underbrace{AB}_{BM+AM} \times 5m \times \frac{1}{2} \times \sin\hat{B} = (\frac{1}{2} \times \sin\hat{B} \times 3m \times BM) \times 3$

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$5BM + 5AM = 9BM$

$5AM = 4BM$

$\frac{BM}{AM} = \frac{5}{4}$

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

$\frac{1}{\sqrt{\cos^2\alpha}} - \tan\alpha = \frac{1+\sin\alpha}{|\cos\alpha|} \longrightarrow \tan\alpha = \frac{-\sin\alpha}{|\cos\alpha|}$ ۲

$|\cos\alpha|$

$\tan\alpha = \tan\alpha \longleftarrow \cos < 0$

$\cancel{\tan\alpha = -\tan\alpha} \longleftarrow \cos > 0$

$\Longrightarrow \cos\alpha < 0 , \sin\alpha < 0$ ناحیه سوم