۱۸/۷۵

پاسخنامه تکلیف شماره ۱۱ — حلما عامری — کلاس دهم ریاضی A

۱) الف) $\sin\frac{15\pi}{4}=\sin\frac{3\pi}{4}=\frac{\sqrt{2}}{2}$ $\quad \tan\frac{11\pi}{4}=\tan(2\pi+\frac{3\pi}{4})=\frac{\frac{\sqrt{2}}{2}}{-\frac{\sqrt{2}}{2}}=-1$

$\cos\frac{13\pi}{4}=\cos\frac{\pi}{4}=\frac{\sqrt{2}}{2} \Rightarrow -1+\frac{\sqrt{2}}{2}\times\frac{\sqrt{2}}{2}=-\frac{1}{2}$ $\quad$ ۱ $\quad$ ۱/۵

ب) $\sin\frac{11\pi}{3}=\frac{2\pi}{3}=-\frac{\sqrt{3}}{2}$ $\quad \cos\frac{10\pi}{3}=\cos\frac{\pi}{3}=-\frac{1}{2}$ $\quad \tan\frac{17\pi}{6}=\tan\frac{5\pi}{6}=\frac{\frac{1}{2}}{-\frac{\sqrt{3}}{2}}=\frac{-1}{\sqrt{3}}=-\frac{\sqrt{3}}{3}$

$-\cos\frac{\pi}{3}$ $\quad$ ۰/۷۵

$\cancel{\Rightarrow \frac{\sqrt{3}}{3}\times\frac{\sqrt{3}}{2}+\frac{1}{2}=\frac{3}{6}+\frac{3}{6}=1}$

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

۲) $\cot x=4 \quad \frac{\cos x}{\sin x}=4 \Rightarrow \cos x=4\sin x \quad \frac{12\sin x-\sin x}{4\sin x+\sin x}=\frac{11\sin x}{5\sin x}=\frac{11}{5}$

۳) $\sin x=2\cos x \rightarrow \tan\alpha=2 \Rightarrow \cos\alpha=\frac{1}{\sqrt{1-\tan^2 x}}=\frac{1}{\sqrt{1+4}}=\frac{1}{\sqrt{5}}$

۴) الف) $+\cos x,\ \tan=\frac{1}{7} \Rightarrow \cos x=7/\ldots \quad -\sin x \Rightarrow -\frac{\sqrt{2}}{10}$

$2\sin^2+\cos^2 x-\frac{4}{3}=0 \longrightarrow \sin^2 x\underbrace{(\sin^2 x+\cos^2 x)}_{1}-\frac{4}{3}=0 \Rightarrow \sin^2 x=\frac{1}{3}$

$1-\sin^2 x=\cos^2 x \Rightarrow 1-\frac{1}{3}=\frac{2}{3}=\cos^2 x \Rightarrow \tan^2 x=\frac{\sin^2 x}{\cos^2 x}=\frac{\frac{1}{3}}{\frac{2}{3}}=\frac{1}{2}$

۶) $\frac{1}{2}\times\sin\alpha\times\sqrt{3}\times 4=3\sqrt{3}\sin\alpha=4{,}5=\frac{9}{2} \rightarrow \sin\alpha=\frac{3}{2\sqrt{3}}=\frac{\sqrt{3}}{2} \rightarrow 60^\circ, 120^\circ$

$\Rightarrow \alpha_{min}=60^\circ,\ \alpha_{max}=120^\circ \rightarrow \frac{120}{60}=2$

۷) $\underbrace{\sin 150^\circ}_{\frac{1}{2}}\times 2x\times 3x=3x^2=54 \Rightarrow x^2=18,\ x=\pm 3\sqrt{2}$ $\quad 9\sqrt{2}=3x \quad 3x=9\sqrt{2}$

$\Rightarrow (9\sqrt{2}+6\sqrt{2})\times 2=(15\sqrt{2})\times 2=30\sqrt{2}$

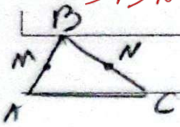
۸) $S_{\hat{ABC}}=\frac{1}{2}\sin A\times 5\times 7=\frac{35}{2}\sin A=17{,}5\sin A,\quad S_{\hat{ADE}}=\frac{1}{2}\times\sin A\times 4\times 7=14\sin A$

$17{,}5-14=3{,}5\sin A=1{,}75 \Rightarrow \sin A=\frac{1}{2} \longrightarrow \sin^2+\cos^2=1 \Rightarrow \frac{1}{4}+\cos^2=1$

$\cos^2=\frac{3}{4} \Rightarrow \cos\alpha=\frac{\sqrt{3}}{2} \Rightarrow \tan=\frac{\sin}{\cos}=\frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}}=\frac{1}{\sqrt{3}}=\frac{\sqrt{3}}{3}$

$$\frac{S_{ABC}}{S_{BMN}} = \frac{\frac{1}{2} \times 5n \times AB \times \sin B}{\frac{1}{2} \times 3n \times BM \times \sin B} = \frac{5n \times AB}{3n \times BM} = 3 \Rightarrow \frac{BM}{|AB|} = \frac{5}{9} \quad \frac{BM}{AM} = \frac{5}{4}$$

$\frac{1}{2} \times BM \times 3n \times \sin \hat{B}$ $\qquad$ $\frac{1}{2} \times AB \times 5n \times \sin B$



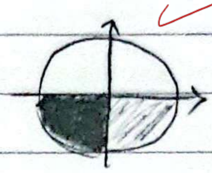
$S_{B\hat{M}N} = \frac{1}{2} \times \overline{BM} \times \overline{BN} . \sin B \qquad S_{A\hat{B}C} = \frac{1}{2} \times \overline{AB} \times \overline{BC} \times \sin B$ ۹

$$\cancel{\frac{\overline{BM} . \overline{BN}}{\overline{AB} . \overline{BC}} = \frac{S_{B\hat{M}N}}{S_{ABC}} = \frac{\overline{BN}}{\overline{BC}} . \frac{3}{5} \to S_{B\hat{M}N} = \frac{1}{2} S_{A\hat{B}N} = \frac{3}{10}}$$

$$\cancel{A\hat{B}C = \frac{3}{10} S_{A\hat{B}C} = \frac{\overline{BM}}{AB} = \frac{1}{2} \rightsquigarrow \overline{AM} = \overline{AB} - \overline{BM} = \overline{AB} - \frac{1}{2} \overline{AB} = \frac{1}{2} \overline{AB}}$$

$$\cancel{\Rightarrow \overline{BM} = \overline{AM} \to \frac{\overline{BM}}{\overline{AM}} = 1}$$

$$\frac{|\sin \alpha|}{\cos \alpha} = \frac{-1}{\frac{\cos}{\sin \alpha}} = \frac{-\sin \alpha}{\cos \alpha} \Rightarrow \sin \alpha < 0$$ ۱۰



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

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

⇒ در ناحیه سوم ۴

LINE NOTE