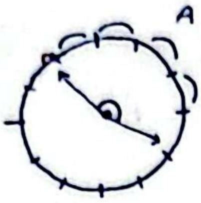
نام: سنا فاضلی ۲۰ تکلیف ۱۹ دهم دختر A

۱- الف)



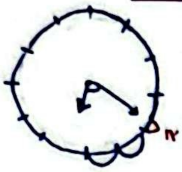
$4\times30+6+27=153^\circ$

$\frac{54}{2}$

ب) $|5.5M-30H| \to |5.5\times54-30\times3|=207$

$360-207=153 \leftarrow$ همان جواب الف

۲- الف)



$30\times2+12+\frac{18}{2}=81$ یا $360-81=279$

ب) $|5.5M-30H| \to |5.5\times18-30\times6|=81$

۳- الف) $S=\frac{\frac{\pi}{6}\times9}{2}=\frac{\frac{3\pi}{2}}{2}=\frac{3\pi}{4}$

ب) محیط $=\frac{\pi}{6}\times3+6=\frac{\pi}{2}+6$

۴- الف) $S=5\times8\times\sin60\times\frac{1}{2}=10\sqrt{3}$ ، $\sin60=\frac{\sqrt{3}}{2}$

ب) $CB=\sqrt{\underbrace{5^2+8^2}_{89}-\underbrace{2\times5\times8\times\frac{1}{2}}_{40}}=7 \longrightarrow$ محیط $=8+7+5=20$

۵- $\hat{B}+\hat{C}=150^\circ \to A=30^\circ$

قضیه سینوس‌ها: $\frac{15}{\sin30}=\frac{15\sqrt{2}}{\sin B}$ ، $\sin30=\frac{1}{2}$

$\frac{30}{1}=\frac{15\sqrt{2}}{\sin B} \to 30\times\sin B=15\sqrt{2}$ ، $\sin B=\frac{\sqrt{2}}{2}$ $\longrightarrow$ زاویه B حاده : 45°

$105^\circ+45^\circ=150$

C: $\frac{105}{180}\pi=\frac{7}{12}\pi$

B: $\frac{\pi}{4}$

۶- $\frac{-\tan\alpha+3\tan\alpha}{-\tan\alpha-\tan\alpha}=\frac{2\tan\alpha}{-2\tan\alpha}=-1$

۷- $\frac{\pi}{12}=15^\circ \longrightarrow \frac{2\tan(90-15)+\tan(90+15)}{3\tan(180-15)-\tan(270-15)}=\frac{2\cot15^\circ-\cot15^\circ}{-3\tan15^\circ-\cot15^\circ}=\frac{\frac{1}{a}}{-3a-\frac{1}{a}}$

$=\frac{\frac{1}{a}}{\frac{-3a^2-1}{a}}=\frac{1}{-3a^2-1}$

۸- مخرج مشترک $\rightarrow \dfrac{\sin x+\cos x}{\sin x-\cos x}+\dfrac{\sin x-\cos x}{\sin x+\cos x}=\dfrac{\sin^2 x+\cos^2 x+2\sin x\cos x+\sin^2 x+\cos^2 x-2\sin x\cos x}{\sin^2 x-\cos^2 x}$

$$\rightarrow \frac{2}{\sin^2 x-\cos^2 x}=3 \rightarrow \begin{cases}\frac{2}{3}=\sin^2 x-\cos^2 x\\ 1=\sin^2 x+\cos^2 x\end{cases}$$

$$2\sin^2 x=\frac{5}{3}\rightarrow \sin^2 x=\frac{5}{6} \qquad \cos^2 x=\frac{1}{6}$$

$$\tan^2 x=\frac{\sin^2 x}{\cos^2 x}=\frac{\frac{5}{6}}{\frac{1}{6}}=5$$

۹- $\dfrac{\sin^2 x-2\cos^2 x+1}{\sin^2 x+\cos^2 x+\cos^2 x-1}=4 \rightarrow \sin^2 x-2\cos^2 x+1=4\cos^2 x \rightarrow \begin{cases}(\sin^2 x-6\cos^2 x=-1)\times -1\\ \sin^2 x+\cos^2 x=1\end{cases}$

$$\rightarrow 7\cos^2 x=2 \rightarrow \cos^2 x=\frac{2}{7}$$

$$\rightarrow \sin^2 x=\frac{5}{7}$$

$$\tan^2 x=\frac{\sin^2 x}{\cos^2 x}=\frac{\frac{5}{7}}{\frac{2}{7}}=\frac{5}{2}$$

۱۰- الف) $\cos^2 \alpha=\dfrac{1+\cos 2\alpha}{2}$ ($\alpha=22.5$, $2\alpha=45$) $\rightarrow \cos 22.5=\pm\sqrt{\dfrac{1+\frac{\sqrt{2}}{2}}{2}}=\dfrac{\sqrt{2+\sqrt{2}}}{2}$

(منفی) غیرقابل قبول (در ربع اول)

ب) $\sin^2 \alpha=\dfrac{1-\cos 2\alpha}{2}$ ($\alpha=67.5$, $2\alpha=135$) $\rightarrow \sin^2=\dfrac{1-(-\frac{\sqrt{2}}{2})}{2}=\pm\dfrac{\sqrt{2+\sqrt{2}}}{2}$

(منفی) غیرقابل قبول (در ربع اول)