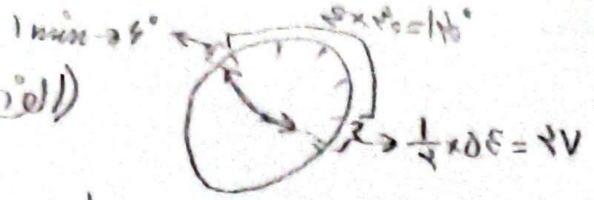
آرام صادقی ۱۸٫۵

۱) (۲)

الف)

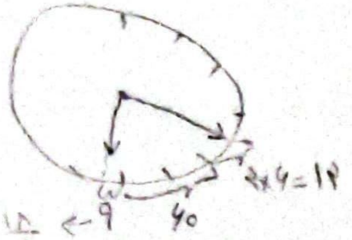


$\Rightarrow 6+120+27=153$ ✓

ب) $|5.5\times 54-90| = 207 \xrightarrow{\text{کمتر از } 180} 360-207=153$ ✓

۲) (۲)

الف)



$\Rightarrow 12+60+9=81$ ✓

ب) $|5.5\times 18-18|=81$ ✓

۳) (۲)

الف) $S=\frac{\alpha}{2}R^2=\frac{\pi}{12}\times 9=\frac{3\pi}{4}$ ✓ ب) $P=6+\alpha R=6+\frac{\pi}{2}$ ✓

۴) (۱)

الف) $S=\frac{1}{2}\times\frac{\sqrt{3}}{2}\times 8\times 5=10\sqrt{3}$ ✓ ب) $CB=\frac{16}{\sqrt{3}} \Rightarrow P=\frac{16}{\sqrt{3}}+\dots$

$\frac{\sqrt{3}}{2}CB=8$

۵) (۲)

قانون سینوس‌ها $\rightarrow \frac{15}{\sin A}=\frac{15\sqrt{2}}{\sin B} \Rightarrow 30=\frac{15\sqrt{2}}{\sin B} \Rightarrow \sin B=\frac{\sqrt{2}}{2} \Rightarrow \hat{B}=\frac{\pi}{4}$ ✓ و $\hat{C}=\frac{7\pi}{12}$ ✓

۶) (۲)

$\frac{\tan(\pi-x)+3\tan(\pi+x)}{\tan(2\pi-x)-\tan(3\pi+x)}=\frac{-\tan x+3\tan x}{-\tan x-\tan x}=\frac{2\tan x}{-2\tan x}=-1$ ✓

۷) (۱٫۵)

$\frac{2\tan(\frac{\pi}{2}-\alpha)+\tan(\frac{\pi}{2}+\alpha)}{3\tan(\pi-\alpha)-\tan(\frac{3}{2}\pi-\alpha)}=\frac{2\cot\alpha-\cot\alpha}{-3\tan\alpha-\cot\alpha}=\frac{\cot\alpha}{3\tan\alpha-\cot\alpha}=\frac{1}{-\tan^2\alpha-1}$

$\frac{1/a}{-3a-\frac{1}{a}}$

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

۸) (۲)

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

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

۹) (۲)

$\frac{\sin^2-2\cos^2+\sin^2-\cos^2}{\sin^2+2\cos^2-\sin^2-\cos^2}=\frac{2\sin^2-3\cos^2}{\cos^2}=4 \Rightarrow 5\cos^2=2\sin^2 \Rightarrow \tan^2 x=\frac{5}{2}$ ✓

۱۰) (۲)

الف) $\cos^2(22.5)=\frac{1+\cos 45}{2} \Rightarrow \cos 22.5=\sqrt{\frac{1+\frac{\sqrt{2}}{2}}{2}}=\frac{\sqrt{2+\sqrt{2}}}{2}$ ✓

ب) $\sin^2 67.5=\frac{1-\cos 135}{2} \Rightarrow \sin 67.5=\sqrt{\frac{1+\frac{\sqrt{2}}{2}}{2}}=\frac{\sqrt{2+\sqrt{2}}}{2}$ ✓

۴ ب)

قضیه سینوس ها

$BC^2 = AB^2 + AC^2 - 2AB \cdot AC \cdot \cos 60^\circ$

$BC^2 = V \rightarrow P = \boxed{۲۰}$