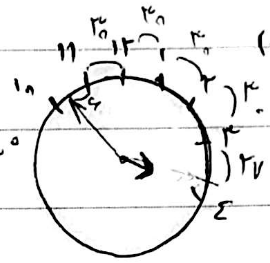
باران لشکری دهم ریاضی B تألیف سری ۱۹

(۱) الف)



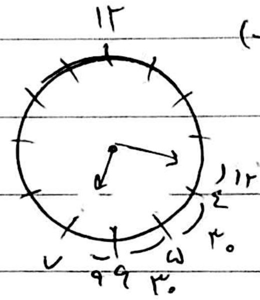
$30+30+30+30+27+6=153^\circ$

ب) $|5.5m-30h|$

$|5.5(54)-30(4)|=|207|=207$

ب) $360-207=153^\circ$

(۲) الف)



$9+30+30+12=81$

ب) $|5.5m-30h|$

$|5.5(18)-30(6)|=|-81|=81$

(۳) الف) $S=\frac{\alpha}{2}R^2=\frac{\pi}{12}\times 9=\frac{3\pi}{4}$

ب) طول کمان $=|\alpha R|=\frac{\pi}{6}\times 3=\frac{\pi}{2}$

$P=\frac{\pi}{2}+6=\frac{\pi+12}{2}$

(۴) الف) $S=\frac{1}{2}\times 5\times 8\times\frac{\sqrt{3}}{2}=10\sqrt{3}$

ب) $BC=\sqrt{8^2+5^2-2(5)(8)\frac{1}{2}}=7$ $\quad P=7+5+8=20$

(۵) $\hat{B}+\hat{C}=150\longrightarrow\hat{A}=30$

$\frac{15}{\sin 30}=\frac{15\sqrt{2}}{\sin B}\longrightarrow 30=\frac{15\sqrt{2}}{\sin B}=\sin B\longrightarrow\frac{\sqrt{2}}{2}\longrightarrow\hat{B}=45^\circ$

ج $\quad 150-45=105^\circ$

$\frac{150}{180}=\frac{Rad}{\pi}\longrightarrow Rad=\frac{5\pi}{6}$

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

$\frac{\pi}{12} = 15^\circ$ $\tan\frac{\pi}{12} = \alpha$ $\cot\frac{\pi}{12} = \frac{1}{\alpha}$

$$A = \frac{2\tan(\frac{\pi}{2}-15^\circ)+\tan(\frac{\pi}{2}+15^\circ)}{2\tan(\pi-15)-\tan(\frac{3\pi}{2}-15^\circ)}$$ (۷)

$$= \frac{2\cot(15^\circ)-\cot(15^\circ)}{-2\tan(15^\circ)\cot(15^\circ)} = \frac{\frac{1}{\alpha}}{\frac{-2\alpha^2-1}{\alpha}} = \frac{-1}{2\alpha^2+1}$$

$$\frac{(\sin\alpha+\cos\alpha)^2+(\sin\alpha-\cos\alpha)^2}{1-\cos^2\alpha-\cos\alpha^2} = \frac{1}{\sin^2\alpha+\cos^2\alpha+2\sin\alpha\cos\alpha+\sin^2\alpha+\cos^2\alpha-2\sin\alpha\cos\alpha}$$ (۸)

$$= \frac{1}{1-2\cos^2\alpha}$$

$\frac{2}{1-2\cos^2\alpha} = 2 \rightarrow 2 = 2-4\cos^2\alpha = -4\cos^2\alpha = -1 \Rightarrow \cos^2\alpha = \frac{1}{4}$

$\rightarrow 1-\tan^2\alpha = 4 \rightarrow \tan^2\alpha = -3$

$$\frac{\sin^2\alpha-2\cos^2\alpha+1}{\sin^2\alpha+2\cos^2\alpha-1} = E \xrightarrow{\div\cos^2} \frac{\tan^2\alpha-2(\frac{1}{\cos^2})}{\tan^2\alpha+2-\frac{1}{\cos^2}}$$ (۹)

$$\frac{2\tan^2\alpha-1}{1} = E$$

$2\tan^2\alpha-1 = E \rightarrow \tan^2\alpha = \frac{4}{2}$

$\tan^2\alpha = 2$

الف) $\cos^2\alpha = \frac{1+\cos^2\alpha}{2} \rightarrow \cos^2\frac{\alpha}{2} = \frac{1+\frac{\sqrt{2}}{2}}{2} = \frac{2+\sqrt{2}}{4} = \cos^2(22.5^\circ)$ (۱۰)

ب) $\sin^2\alpha = \frac{1-\cos^2\alpha}{2} = \frac{1+\frac{\sqrt{2}}{2}}{2}$ $\cos 22.5^\circ = \frac{\sqrt{2+\sqrt{2}}}{2}$

$\sin 67.5^\circ = \frac{\sqrt{2+\sqrt{2}}}{2}$ $\cos\beta = \sin\alpha \leftarrow \beta+\alpha = 90^\circ$

Sibó