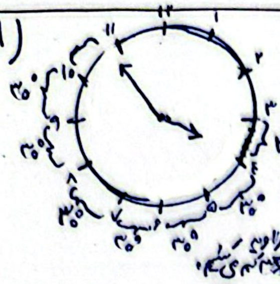
نام و نام خانوادگی [illegible] پاسخنامه تشریحی تکلیف شماره ..۱۹.. کلاس ...دهم ...B...

۱

الف)



میزان جلو آمدن عقربه ساعت شمار $\Leftarrow$ نصف دقیقه $= \frac{1}{2} \times 54 = 27^\circ \rightarrow 30 - 27 = 3^\circ$

میزان جلو رفتن عقربه دقیقه شمار $\rightarrow 4 \times 6 = 24^\circ$

$(6 \times 30) + 24 + 3 = 180 + 24 + 3 = 207^\circ$

چون گفته کوچکتر از ۱۸۰ زاویه بدست آمده را از ۳۶۰ کم می کنیم $\rightarrow 360 - 207 = 153^\circ$

ب) زاویه بین عقربه های ساعت $= |5.5m - 30h| = |(5.5 \times 54) - (30 \times 3)| = |297 - 90| = 207^\circ$

چون گفته کوچکتر از 180° $\rightarrow 360 - 207 = 153 \rightarrow 153^\circ$

فقط 153° می شود

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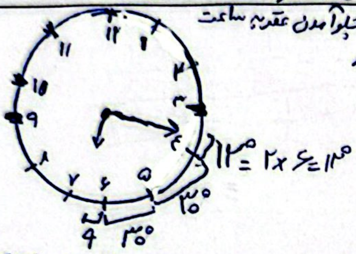
الف)



میزان جلو آمدن عقربه ساعت شمار $= \frac{1}{2} \times 18 = 9^\circ$

$12 + 9 + 60 = 81^\circ$

$360 - 81 = 279^\circ$

ب) زاویه بین عقربه های ساعت $= |5.5m - 30h| = |(5.5 \times 18) - (30 \times 6)| = |99 - 180| = |-81| = 81^\circ$

$\rightarrow 360 - 81 = 279^\circ$

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الف) $\frac{\frac{\pi}{6}}{\pi} = \frac{D}{180} \rightarrow D = \frac{180 \times \frac{\pi}{6}}{\pi} = 30^\circ \rightarrow \frac{30}{360} = \frac{1}{12} \rightarrow S_{\text{دایره}} = \pi r^2$

$S_{\text{قطاع}} = \frac{1}{12} \times 3 \times 3 \times \pi = \frac{3\pi}{4}$ ، $S_{\text{قطاع}} = \frac{\alpha}{2} R^2 = \frac{1}{2} \times \frac{\pi}{6} \times 9 = \frac{3\pi}{4}$

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

$\rightarrow$ محیط قطاع $= 3 + 3 + \frac{\pi}{2} = 6 + \frac{\pi}{2}$

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الف) $S_{\text{مثلث}} = \frac{1}{2} \times a \times b \times \sin\alpha \rightarrow S = 8 \times 5 \times \sin 60^\circ = 8 \times 5 \times \frac{\sqrt{3}}{2} = 20\sqrt{3} = 20\sqrt{3}$

ب) $a = \sqrt{b^2 + c^2 - 2bc\cos\hat{A}} = \sqrt{(5^2 + 8^2) - (2 \times 5 \times 8 \times \cos 60^\circ)} = \sqrt{25 + 64 - (80 \times \frac{1}{2})} = \sqrt{89 - 40}$

$= \sqrt{49} = 7$

$\left.\begin{array}{l} a = 7 \\ b = 8 \\ c = 5 \end{array}\right\}$ محیط مثلث $= 5 + 7 + 8 = 20$

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$\left.\begin{array}{l} \hat{B} + \hat{C} = 150^\circ \\ \hat{A} + \hat{B} + \hat{C} = 180^\circ \end{array}\right\} \rightarrow \hat{A} = 30^\circ \rightarrow \frac{a}{\sin\hat{A}} = \frac{b}{\sin\hat{B}} \rightarrow \frac{15}{\sin 30} = \frac{15\sqrt{2}}{\sin\hat{B}} \rightarrow \frac{15}{\frac{1}{2}} = \frac{15\sqrt{2}}{\sin\hat{B}}$

$\rightarrow \sin\hat{B} = \frac{15\sqrt{2} \times \frac{1}{2}}{15} = \frac{\sqrt{2}}{2} \rightarrow \hat{B} \begin{cases} \hat{B} = 45^\circ \\ \hat{B} = 135^\circ \times \end{cases}$ گفته حاده است B

$\sin\hat{B} = \frac{\sqrt{2}}{2}$

$\hat{B} = 45^\circ = \frac{\pi}{4}$

$\left.\begin{array}{l} \hat{B} = 45^\circ \\ \hat{A} = 30^\circ \end{array}\right\} \hat{C} = 180 - 75 = 105^\circ$

$\hat{C} = 105^\circ \rightarrow \frac{D}{180} = \frac{rad}{\pi} \rightarrow \frac{105}{180} = \frac{rad}{\pi} \rightarrow rad = \frac{105\pi}{180} = \frac{7\pi}{12}$

$\hat{B} = \frac{\pi}{4}$

$\hat{C} = \frac{7\pi}{12}$

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

$$\frac{D}{180}=\frac{R}{\pi} \to \frac{D}{180}=\frac{\frac{\pi}{12}}{\pi} \to D=\frac{180\times\frac{\pi}{12}}{\pi}=15^\circ \to D=15^\circ \to \tan 15^\circ = a$$

$$\to \cot 15^\circ = \frac{1}{a}$$

$$\frac{2\tan(\frac{\pi}{2}-15^\circ)+\tan(\frac{\pi}{2}+15^\circ)}{3\tan(\pi-15^\circ)-\tan(\frac{3\pi}{2}-15^\circ)} = \frac{2\cot 15^\circ-\cot 15^\circ}{-3\tan 15^\circ-\cot 15^\circ} = \frac{\frac{2}{a}-\frac{1}{a}}{-3a-\frac{1}{a}} = \frac{\frac{1}{a}}{\frac{-3a^2-1}{a}}$$ ۷

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

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

$$\frac{\sin x+\cos x}{\sin x-\cos x}+\frac{\sin x-\cos x}{\sin x+\cos x}=3 \to \frac{(\sin x+\cos x)^2+(\sin x-\cos x)^2}{(\sin x-\cos x)(\sin x+\cos x)}=3$$

$$\to \frac{\sin^2x+\cos^2x+2\cos x\sin x+\sin^2x+\cos^2x-2\sin x\cos x}{\sin^2x-\cos^2x}=3 \to \frac{2\sin^2x+2\cos^2x}{\sin^2x-\cos^2x}=3$$ ۸

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

$$2\sin^2x=\frac{5}{3} \to \sin^2x=\frac{5}{6} \to \cos^2x=\frac{1}{6} \to \tan^2x=\frac{\sin^2x}{\cos^2x}=\frac{\frac{5}{6}}{\frac{1}{6}}=\frac{5}{6}\times 6=5$$

$$\frac{\sin^2x+1-\cos^2x}{\sin^2x+\cos^2x+\cos^2x-1}=4 \to \frac{\sin^2x+\sin^2x-\cos^2x}{1+\cos^2x-1}=4 \to \frac{2\sin^2x-\cos^2x}{\cos^2x}=4$$

$$\Rightarrow 4\cos^2x=2\sin^2x-\cos^2x \to 5\cos^2x=2\sin^2x \to \frac{\sin^2x}{\cos^2x}=\frac{5}{2}=\frac{5}{2}$$ ۹

$$\to \tan^2x=\frac{5}{2} \to \tan^2x=\frac{5}{2}$$

الف) $\cos^2\alpha=\frac{1+\cos 2\alpha}{2} \to \cos^2 22/5=\frac{1+\cos 45}{2} \to \cos^2 22/5=\frac{1+\frac{\sqrt{2}}{2}}{2}$

$\to \cos 22/5=\sqrt{\frac{\frac{2+\sqrt{2}}{2}}{2}} \to \cos 22/5=\sqrt{\frac{2+\sqrt{2}}{4}} \to \cos 22/5=\frac{\sqrt{2+\sqrt{2}}}{2}$ ۱۰

ب) $\sin^2\alpha=\frac{1-\cos 2\alpha}{2} \to \sin^2 67/5=\frac{1-\cos 135}{2} \to \sin^2 67/5=\frac{1-(-\frac{\sqrt{2}}{2})}{2}$

$\to \sin^2 67/5=\frac{1+\frac{\sqrt{2}}{2}}{2} \to \sin^2 67/5=\frac{2+\sqrt{2}}{4} \to \sin 67/5=\frac{\sqrt{2+\sqrt{2}}}{2}$