نام و نام خانوادگی ...مریم محمدی زاده........ پاسخنامه تشریحی تکلیف شماره ..۱۶.. کلاس ....دهم A....

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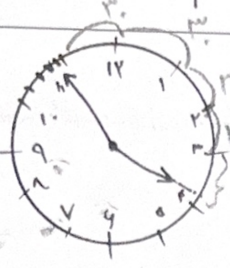
الف) ← $3:54'$



$60' \longrightarrow 30°$ ساعت عقربه

$30 \quad 54' \longrightarrow 27°$

هر ساعت

$54 \times 6 = 324 \Rightarrow 360 - 324 =$

هر دقیقه $6°$ $\Longrightarrow 6 + 4\times 30 + 27 = \boxed{153}$

ب) ← $|(5/5\times 54) - (30\times 3)| = 207 \Rightarrow 360 - 207 = \boxed{153}$

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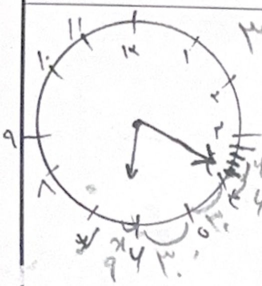
الف) $6:18'$



بین هر ساعت $= 30°$ ، $\frac{360}{12} = 30$

هر دقیقه $= 6°$ ، $\frac{30}{5} = 6$

$60' \longrightarrow 30°$

$18 \longrightarrow x = 9°$

$\Rightarrow 9 + 30 + 30 + 6 + 6 = \boxed{81°}$

ب) ← $|5/5m - 30h| = |5/5\times 18 - 30\times 6| = \boxed{81°}$

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الف) $S = ?$ ⟸ $S = \frac{\frac{\pi}{6}}{2}\times R^2 = \frac{\pi}{12}\times 9 = \boxed{\frac{3\pi}{4}}$

$\frac{\pi}{6}\times 3 = \frac{\pi}{2}$

ب) $P = ?$ ← $\widehat{AB} = \frac{\pi}{6}\times R = \frac{\pi}{2} \Rightarrow \boxed{P = \widehat{AB} + 2R = \frac{\pi}{2} + 6}$

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الف) S ⟸ $S_{\overset{\triangle}{ABC}} = \frac{1}{2} AB\times AC\times \sin 60° = 5\times 8\times\frac{\sqrt{3}}{2} = 20\sqrt{3}\times\frac{1}{2} = \boxed{10\sqrt{3}}$

ب) $P = ?$

$BC = \sqrt{5^2 + 8^2 - 2\times 5\times 8\times \cos 60°} = \sqrt{49} = 7$

$\cos 60° = \frac{1}{2}$ ، $\Rightarrow \boxed{P = 8 + 7 + 5 = 20}$

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$\hat{B} + \hat{C} = 150° \Rightarrow \hat{C} = 150° - \hat{B}$

$\hat{A} = 180 - 150 = 30°$

$\frac{BC}{\sin A} = \frac{AC}{\sin B} = \frac{AB}{\sin C}$ $\quad \boxed{B = 45° = \frac{\pi}{4}}$

$\frac{15}{\frac{1}{2}} = \frac{15\sqrt{2}}{\sin B} \Rightarrow \sin\hat{B} = \frac{\frac{1}{2}\times 15\sqrt{2}}{15} = \frac{\sqrt{2}}{2} \Rightarrow B = 45$ یا ~~۱۳۵~~

$\Rightarrow C = 150 - 45 = 105$

$\frac{105}{180} = \frac{x}{\pi}$

$\frac{\pi\times 105}{180} = \boxed{\frac{7\pi}{12}}$

۶

$$\tan(\pi-\alpha)=-\tan\alpha$$
$$3\tan(\pi+\alpha)=3\tan\alpha$$
$$\tan(2\pi-\alpha)=-\tan\alpha$$
$$\tan(2\pi+\alpha)=\tan\alpha$$

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

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$$\frac{\pi}{12}=15^\circ \qquad \tan 75=\tan(\underbrace{90}_{\frac{\pi}{2}}-15)=\cot 15$$
$$\tan 15=a \qquad \tan 105=\tan(90+15)=-\cot 15$$
$$\tan 165=\tan(\underbrace{180}_{\pi}-15)=-\tan 15$$
$$\tan 255=\tan(180+75)=\tan 75=\cot 15$$

$$A=\frac{2\cot 15-\cot 15}{-3\tan 15-\cot 15}=\frac{\frac{1}{a}}{-3a-\frac{1}{a}}=-\frac{1}{3a^2+1}$$

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

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

مخرج مشترک

$$\sin^2x-\cos^2x=\frac{2}{3}\Rightarrow 1-\cos^2x=\frac{2}{3}+\cos^2x$$
$$\sin^2x=\frac{2}{3}+\cos^2x \qquad \cos^2x=\frac{1}{6}$$

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

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$$\sin^2x=1-\cos^2x$$
$$\frac{1-\cos^2x-2\cos^2x+1}{1-\cos^2x+2\cos^2x-1}=\frac{2-3\cos^2x}{\cos^2x}=4$$
$$4\cos^2x=2-3\cos^2x$$
$$\cos^2x=\frac{2}{7}\longrightarrow \sin^2x=1-\frac{2}{7}=\frac{5}{7}$$

$$\tan^2x=\frac{\sin^2x}{\cos^2x}=\frac{\frac{5}{7}}{\frac{2}{7}}=$$
$$\boxed{\tan^2x=\frac{5}{2}=2.5}$$

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الف) $\cos(22.5^\circ)\Leftarrow$

$$\cos\left(\frac{45}{2}\right)\longrightarrow\sqrt{\frac{1+\frac{\sqrt{2}}{2}}{2}}=\frac{\sqrt{2+\sqrt{2}}}{2}$$
$$\cos\left(\frac{\theta}{2}\right)=\sqrt{\frac{1+\cos\theta}{2}} \qquad \sqrt{\frac{\frac{2+\sqrt{2}}{2}}{2}}$$

ب) $\sin(67.5^\circ)$

$$67.5+22.5=90$$

سینوس با کسینوس زوایای متمم با هم برابرند

$$\Rightarrow \sin(67.5^\circ)=\cos(22.5^\circ)=\frac{\sqrt{2+\sqrt{2}}}{2}$$