نام و نام خانوادگی ......عرفان یزدی...... پاسخنامه تشریحی تکلیف شماره ..۱۹.. کلاس ....

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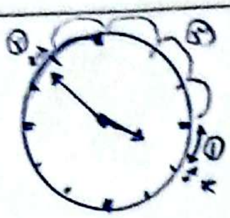
الف)



③ $\rightarrow 4\times 30^\circ = 120^\circ$

② $\rightarrow 1\times 6^\circ = 6^\circ$

① $\rightarrow 30 - 3^\circ = 27^\circ$

$120^\circ + 6^\circ + 27^\circ = 153^\circ$

$* \rightarrow 30 - (\frac{54}{2}) = 30 - 27 = 3^\circ$

ب)

$\alpha = |5.5\times 54 - 30\times 3| = 207$

$360 - 207 = 153^\circ$

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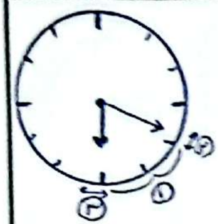
الف)



① $\rightarrow 2\times 30^\circ = 60^\circ$

② $\rightarrow 2\times 6^\circ = 12^\circ$

③ $\rightarrow 30 - (\frac{18}{2}) = 21^\circ$

$30 - 21 = 9^\circ$

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

ب)

$\alpha = |5.5\times 18 - 30\times 6| = 81^\circ$

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الف)

$S_{OAB} = \frac{\alpha r^2}{2} = \frac{\frac{\pi}{6}\times 3^2}{2} = \frac{3\pi}{4}$

ب)

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

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

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الف)

$S = \frac{1}{2}ab\sin 60^\circ = \frac{1}{2}\times 8\times 5\times \frac{\sqrt{3}}{2} = 10\sqrt{3}$

ب)

$a^2 = (5)^2 + (8)^2 - 2\times(8\times 5)\cos 60^\circ = 89 - 80\times\frac{1}{2} = 49 \rightarrow a = \sqrt{49} = 7$

محیط $= 8 + 5 + 7 = 20$

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$\frac{a}{\sin \hat{A}} = \frac{b}{\sin B} \rightarrow \frac{15}{\frac{1}{2}} = \frac{15\sqrt{2}}{x} \Rightarrow 15x = \frac{15\sqrt{2}}{2} \Rightarrow x = \frac{\sqrt{2}}{2}$

$\xrightarrow[\text{حاده است}]{\hat{B}\ \text{از آنجایی که}} \hat{B} = 45^\circ \Rightarrow 45 + 30 = 75 \quad 180 - 75 = 105 = \hat{C}$

$\frac{Rad}{\pi} = \frac{D}{180} \Rightarrow \frac{105}{180} = \frac{Rad}{\pi} \Rightarrow 7\pi = 12\,Rad \Rightarrow \frac{7\pi}{12} = Rad$

۶

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

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

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

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

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

$$\frac{-1}{\cos 2x}=\frac{3}{2}\to\frac{1+\tan^2x}{1-\tan^2x}=\frac{-3}{2}\to 2+2\tan^2x=-3+3\tan^2x\to\boxed{5=\tan^2x}$$

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

هرجا تقسیم بر $\cos x$

$$\frac{\frac{2\sin^2x}{\cos^2x}-\cancel{\frac{\cos^2x}{\cos^2x}}^{\,1}}{\cancel{\frac{\cos^2x}{\cos^2x}}^{\,1}}=2\tan^2x-1=4\to 2\tan^2x=5\to\boxed{\tan^2x=\frac{5}{2}}$$

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الف)

$$\cos^2\alpha=\frac{1+\cos 2\alpha}{2}\to\cos^2\frac{\alpha}{2}=\frac{1+\cos\alpha}{2}\to\cos\frac{\alpha}{2}=\sqrt{\frac{1+\cos\alpha}{2}}$$

$$22.5^\circ=\frac{45^\circ}{2},\ \cos 45^\circ=\frac{\sqrt{2}}{2}\ \Big|\ \cos 22.5^\circ=\sqrt{\frac{1+\frac{\sqrt{2}}{2}}{2}}=\sqrt{\frac{2+\sqrt{2}}{4}}=\frac{\sqrt{2+\sqrt{2}}}{2}$$

$$\sin\frac{\alpha}{2}=\sqrt{\frac{1+\cos\alpha}{2}},\ 67.5^\circ=\frac{135^\circ}{2}\quad \cos 67.5^\circ=\sqrt{\frac{1-(-\frac{\sqrt{2}}{2})}{2}}$$

$$=\frac{\sqrt{2+\sqrt{2}}}{\sqrt{4}}\Rightarrow\boxed{\cos 67.5^\circ=\frac{\sqrt{2+\sqrt{2}}}{2}}$$