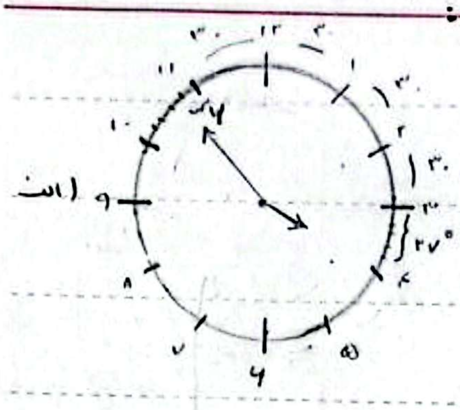
Subject:

Date : / /   دهم ریاضی A   کلاس :   شماره تقلید : ۱۹   نام : فاطمه اجری

۲۰

-۱   ۳: ۵۴′

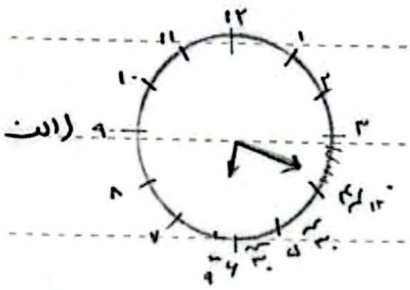
الف) 

(انحراف)

$\frac{۵۴}{۲} = ۲۷°$ ۱۲۶ + ۲۷° = ۱۵۳°

ب) $|۵/۵M - ۳۰h| = |\underbrace{(۵/۵ \times ۵۴)}_{۲۹۷} - \underbrace{۳۰(۳)}_{۹۰}| = ۲۰۷°$

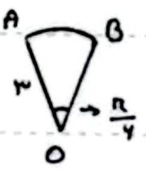
-۲   ۶:۱۸

الف) 

$\frac{۱۸}{۲} = ۹$ (انحراف)   ۶۰ + ۱۲ + ۹ = ۸۱°

ب) $|۵/۵M - ۳۰h| = |\underbrace{۵/۵(۱۸)}_{۹۹} - \underbrace{۳۰(۶)}_{۱۸۰}| = |-۸۱| = ۸۱°$

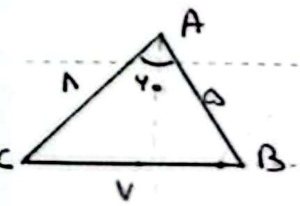
-۳ $\alpha = \frac{\pi}{۶}$ Rad $r = ۳$



الف) مساحت : $S = \frac{\alpha}{۲} r^۲ = \frac{\frac{\pi}{۶}}{۲} \times ۳^۲ = \frac{\pi}{۱۲} \times ۹ = \frac{۳\pi}{۴}$

$l = \alpha r = \frac{۳\pi}{۶} = \frac{\pi}{۲}$

ب) محیط : $P = ۲r + l = ۲(۳) + \frac{\pi}{۲} = ۶ + \frac{\pi}{۲} = \frac{۱۲+\pi}{۲}$



$* \frac{۱}{۲} ab \sin c$

الف) $S_{ABC} = \frac{۱}{۲} \times \overline{AC} \times \overline{AB} \times \sin A = \frac{۱}{۲} \times ۸ \times ۵ \times \sin ۶۰° = \frac{۲۰\sqrt{۳}}{۲} = ۱۰\sqrt{۳} = K$

ب) $P_{ABC} = ۵ + ۸ + ۷ = ۲۰$

$* \ \overline{BC} = \sqrt{۸^۲ + ۵^۲ - ۲(۸\times۵)\cos ۶۰°} = \sqrt{\underbrace{(۶۴+۲۵)}_{۸۹} - \underbrace{(۸۰ \times \frac{۱}{۲})}_{-۴۰}} = \sqrt{۴۹} = ۷ \Rightarrow \overline{BC} = ۷$

قانون کسینوس‌ها

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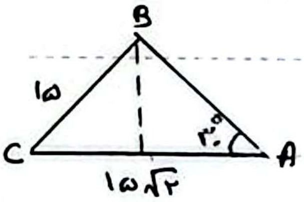
Sa Su Mo Tu We Th Fr



—۵ $\hat{B}+\hat{C}=150^\circ$; $\hat{B},\hat{C}=?$ (Rad)

$\hookrightarrow A=30^\circ$ $\quad \sin 30^\circ=\frac{1}{2}$

$\frac{\overline{BC}}{\sin A}=\frac{\overline{AC}}{\sin B} \rightsquigarrow \frac{15}{\frac{1}{2}}=30=\frac{15\sqrt{2}}{\sin B} \rightsquigarrow \cancel{30}\sin B=15\sqrt{2}$

$B+C=150^\circ \to C=105^\circ \Leftarrow$ «$B=45^\circ$» $\Leftarrow$ $\underbrace{B<90}_{\text{صورت سوال}}$ $\Leftarrow$ $\sin B=\frac{\sqrt{2}}{2}$

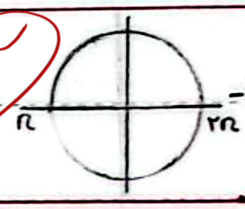
$B=45^\circ \rightsquigarrow \frac{45}{180}=\frac{R}{\pi}=\frac{\pi}{4}$, $C=\frac{105}{180}=\frac{R}{\pi}=\frac{\overset{7}{\cancel{105}}\pi}{\underset{12}{\cancel{180}}}=\frac{7\pi}{12}$

۳

—۶

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

۳



—۷ $\tan\frac{\pi}{12}=a \rightsquigarrow \frac{\frac{\cancel{\pi}}{12}}{\cancel{\pi}}=\frac{D}{180}=\frac{15}{180} \Rightarrow D=15^\circ \rightsquigarrow \tan 15^\circ=a$

$$A=\frac{2\tan75^\circ+\tan105^\circ}{3\tan165^\circ-\tan255^\circ}=\frac{2\tan(90^\circ-15^\circ)+\tan(90^\circ+15^\circ)}{3\tan(180^\circ-15^\circ)-\tan(270^\circ-15^\circ)}=\frac{2\tan(\frac{\pi}{2}-15)+\tan(\frac{\pi}{2}+15)}{3\tan(\pi-15)-\tan(\frac{3\pi}{2}-15)}$$

$*\ 90^\circ=\frac{\pi}{2}$ / $180^\circ=\pi$ / $270^\circ=\frac{3\pi}{2}$

$$\cot=\frac{1}{\tan} \Leftarrow \frac{2\cot15^\circ-\cot15^\circ}{-3\tan15^\circ-\cot15^\circ} \xRightarrow{15^\circ=a} \frac{2(\frac{1}{a})-\frac{1}{a}}{-3(a)-\frac{1}{a}}=\frac{\frac{1}{a}}{-3a-\frac{1}{a}}=\frac{\frac{1}{\cancel{a}}}{\frac{-3a^2-1}{\cancel{a}}}=\frac{1}{-3a^2-1}=-\frac{1}{3a^2+1}$$

۳

—۸

$$\frac{\sin x+\cos x}{\sin x-\cos x}+\frac{\sin x-\cos x}{\sin x+\cos x}=3 \rightsquigarrow \tan^2x=?$$

مخرج مشترک ←

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

$$\frac{\overbrace{\sin^2x+\cos^2x}^{1}+2\cancel{\sin x\cos x}+\overbrace{\sin^2x+\cos^2x}^{1}-2\cancel{\sin x\cos x}}{\sin^2x-\cos^2x}=\frac{2}{\sin^2x-\cos^2x}=3 \rightsquigarrow$$

$$\frac{1}{\sin^2x-\cos^2x}=\frac{3}{2} \rightsquigarrow \underbrace{\sin^2x-\cos^2x}_{-\cos2x}=\frac{2}{3} \to \cos2x=-\frac{2}{3}$$

۳

$$*\tan^2x=\frac{1-\cos2x}{1+\cos2x}=\frac{1-(-\frac{2}{3})}{1+(-\frac{2}{3})}=\frac{\frac{5}{3}}{\frac{1}{3}}=\boxed{5}$$

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$$\frac{\sin^2 x - 2\cos^2 x + 1}{\sin^2 x + 2\cos^2 x - 1} = 4 \leadsto \tan^2 x = ?$$ -۹

$$\frac{(1-\cos^2 x) - 2\cos^2 x + 1}{(1-\cos^2 x) + 2\cos^2 x - 1} = \frac{2 - 3\cos^2 x}{\cos^2 x} = 4$$

$$\star\ \cos^2 x = \frac{1+\cos 2x}{2} \leadsto \frac{2 - 3\left(\frac{1+\cos 2x}{2}\right)}{\frac{1+\cos 2x}{2}} = \frac{(1-3\cos 2x)\cancel{\frac{1}{2}}}{(1+\cos 2x)\cancel{\frac{1}{2}}} = 4$$

$$\frac{1-3\cos 2x}{1+\cos 2x} = 4 \leadsto 1 - 3\cos 2x = 4 + 4\cos 2x \leadsto -7\cos 2x = 3 \Rightarrow \cos 2x = \frac{-3}{7}$$

$$\star\ \tan^2 x = \frac{1-\cos 2x}{1+\cos 2x} = \frac{1-\left(-\frac{3}{7}\right)}{1+\left(-\frac{3}{7}\right)} = \frac{\frac{10}{7}}{\frac{4}{7}} = \frac{70}{28} = \frac{10}{4} = \boxed{\frac{5}{2}}$$

الف) $\cos(22{,}5^\circ) \rightarrow \cos^2\alpha = \frac{1+\cos 2\alpha}{2} \leadsto \cos^2 22{,}5^\circ = \frac{1+\cos 45^\circ}{2} =$ -۱۰

$$\cos^2 22{,}5 = \frac{1+\frac{\sqrt{2}}{2}}{2} = \frac{\frac{2+\sqrt{2}}{2}}{2} = \frac{2+\sqrt{2}}{4} \leadsto \cos^2 22{,}5 = \frac{2+\sqrt{2}}{4} \leadsto \cos 22{,}5 = \pm\frac{\sqrt{2+\sqrt{2}}}{2}$$

به ع.ق. ناحیه

ب) $\sin(67{,}5^\circ) \rightarrow \sin^2\alpha = \frac{1-\cos 2\alpha}{2} \leadsto$

$$\sin^2 67{,}5 = \frac{1-\cos 135^\circ}{2} = \frac{1-\left(-\frac{\sqrt{2}}{2}\right)}{2} = \frac{\frac{2+\sqrt{2}}{2}}{2} \Rightarrow \sin^2\alpha = \frac{2+\sqrt{2}}{4} \rightarrow \sin 67{,}5^\circ = \pm\frac{\sqrt{2+\sqrt{2}}}{2}$$

به ع.ق. ناحیه