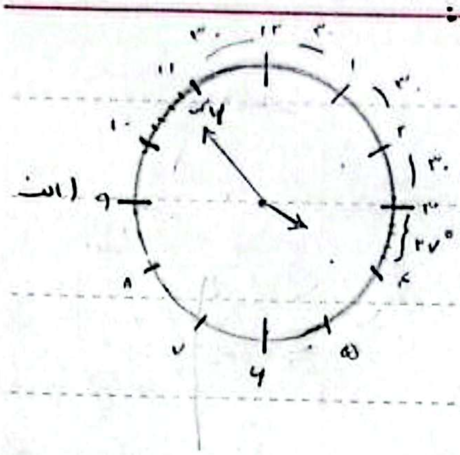
Subject:

Date: / /   دهم ریاضی A

نام: فاطمه احدی   شماره تقلیت: ۱۹   کلاس:

Sa | Su | Mo | Tu | We | Th | Fr

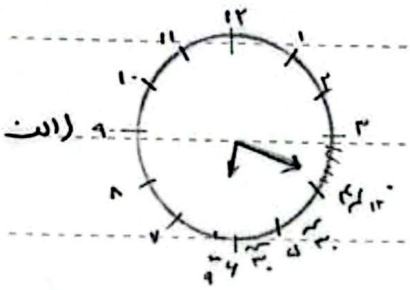
۱- ۳:۵۴'



الف) $\frac{۵۴}{۲} = ۲۷^\circ$ (استنتاج) $۱۲۶ + ۲۷ = ۱۵۳^\circ$

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

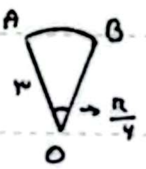
۲- ۶:۱۸



الف) $\frac{۱۸}{۲} = ۹$ (استنتاج) $۶۰ + ۱۲ + ۹ = ۸۱^\circ$

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

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

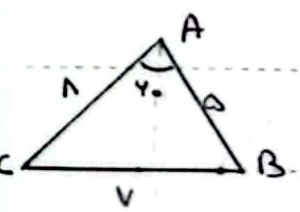


الف) مساحت: $S = \frac{\alpha}{۲} r^۲ = \frac{\frac{\pi}{۶}}{۲} \times ۳^۲ = \frac{\pi}{۱۲} \times ۹ = \frac{۳\pi}{۴}$

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

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

$* \ \frac{۱}{۲} ab \sin\alpha$



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

ب) $P_{ABC} = ۵ + ۸ + ۷ = ۲۰$

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

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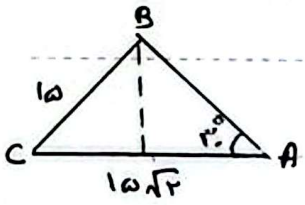


$\hat{B}+\hat{C}=150^\circ$; $\hat{B}, \hat{C}=?$ (Rad) — ۵

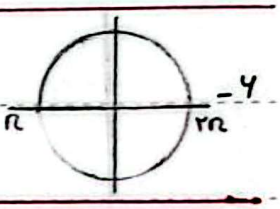
$\hookrightarrow A=30^\circ$, $\sin 30^\circ=\frac{1}{2}$

$\frac{\overline{BC}}{\sin A}=\frac{\overline{AC}}{\sin B} \rightsquigarrow \frac{10}{\frac{1}{2}}=\frac{15\sqrt{2}}{\sin B} \rightsquigarrow 30\sin B=15\sqrt{2}$

$B+C=150^\circ \rightarrow C=100^\circ$ $\Leftarrow$ «$B=45^\circ$» در $B<90$ در $\sin B=\frac{\sqrt{2}}{2}$ (در ناحیه اول)

$B=45^\circ \rightsquigarrow \frac{45}{180}=\frac{R}{r}=\frac{r}{4}$, $C=\frac{100}{180}=\frac{R}{r}=\frac{100R}{180}=\frac{5r}{9}$

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



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

$$A=\frac{2\tan 75^\circ+\tan 105^\circ}{2\tan 165^\circ-\tan 225^\circ}=\frac{2\tan(90^\circ-15^\circ)+\tan(90^\circ+15^\circ)}{2\tan(180^\circ-15^\circ)-\tan(270^\circ-45^\circ)}=\frac{2\tan(\frac{\pi}{2}-15)+\tan(\frac{\pi}{2}+15)}{2\tan(\pi-15)-\tan(\frac{3\pi}{2}-45)}$$

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

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

$\frac{\sin x+\cos x}{\sin x-\cos x}+\frac{\sin x-\cos x}{\sin x+\cos x}=2$ $\rightsquigarrow \tan^2 x=?$ — ۸

جمع تشدید ←

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

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

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

$$*\tan^2 x=\frac{1-\cos 2x}{1+\cos 2x}=\frac{1-(-\frac{3}{5})}{1+(-\frac{3}{5})}=\frac{\frac{8}{5}}{\frac{2}{5}}=4$$

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

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

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

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

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

الف) $\cos(22/5^\circ) \rightarrow \cos^2\alpha = \frac{1+\cos 2\alpha}{2} \rightsquigarrow \cos^2 22/5^\circ = \frac{1+\cos 45^\circ}{2} = \ldots$

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

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

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