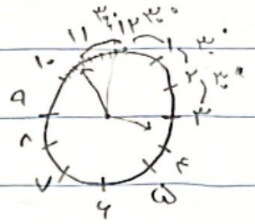
تیزهوشان   تکلیف شماره ۱۹   دهم دختر B

(۱

الف) $۳:۵۴'$



$(۴\times ۳۰)+۶+۲۷=۱۵۳^{\circ}$

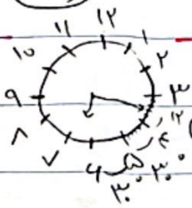
$۵۴ \div ۲ = ۲۷$ ، $۹۶+۲۷=۱۲۳$

ب) $\alpha=|۵/۵m-۳۰h| \rightarrow \alpha=|۵/۵\times ۵۴-۳۰\times ۳|$

$\frac{۱۱}{۲}\times ۵۴=۲۹۷$ ، $۲۹۷-۹۰=۲۰۷$ ، $۳۶۰-۲۰۷=۱۵۳$

(۲

الف) $۶:۱۸'$



$(۲\times ۶)+۳۰+۳۰+۹=۲۱+۶۰=۸۱$

ب) $|۵/۵m-۳۰h| \rightarrow ۵/۵(۱۸)-۳۰(۶)=|-۸۱|$
$=۸۱^{\circ}$

(۳

$\alpha=\frac{\pi}{۶}$ $r=۳cm$

الف) $S=\frac{\alpha}{۲}r^۲$ $\frac{\pi}{۶}\times\frac{۱}{۲}\times ۳\times ۳=\frac{۳\pi}{۴}$

ب) $\alpha r \rightarrow \frac{\pi}{۶}\times ۳=\frac{\pi}{۲} \longrightarrow \frac{\pi}{۲}+۳+۳=۶+\frac{\pi}{۲}$

(۴

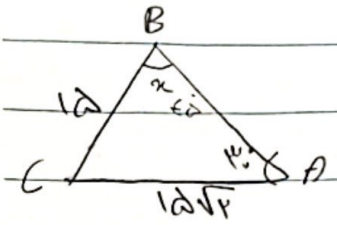
الف) $S_{ABC}=۸\times ۵\times \sin ۶۰^{\circ} \longrightarrow ۸\times ۵\times\frac{\sqrt{۳}}{۲}=۲۰\sqrt{۳}$

ب) $P_{ABC}= \rightarrow CB=\sqrt{۵^۲+۸^۲-۲(۸\times ۵)\times\cos ۶۰^{\circ}}=۷+۸+۵=۲۰$

$-۸۰\times\frac{۱}{۲}$

$۲۵+۶۴-۴۰$

$۲۴+۲۵=۴۹$



(۵)

$B+C=150^\circ \rightarrow A=30^\circ$

$\frac{15}{\sin 30^\circ} = \frac{15\sqrt{2}}{\sin x}$ $\quad \frac{1}{2} \times 15\sqrt{2} = 15 \times \sin x$

$\sin x = \frac{1}{2} \times 15\sqrt{2} \times \frac{1}{15}$

$B+C=150^\circ \rightarrow C=150^\circ - 45^\circ = 105^\circ$ $\quad \sin x = \frac{\sqrt{2}}{2} \rightarrow x = 45^\circ$

$B = 45^\circ$ $\quad x = 135^\circ$ (غ ق ق)

$45^\circ = \frac{\pi}{4}$ $\quad \frac{15\pi}{180} = \frac{R}{\pi} \rightarrow \frac{15\pi}{180} = \frac{r}{24} = \frac{\pi}{12}$

(۶)

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

(۷)

$\frac{\pi}{12} = 15^\circ$

$$\frac{2\tan(\frac{\pi}{2} - 15^\circ) + \tan(\frac{\pi}{2} + 15^\circ)}{3\tan(\pi - 15^\circ) - \tan(\frac{3\pi}{2} - 15^\circ)}$$

$$= \frac{2\cot 15^\circ - \cot 15^\circ}{-3\tan 15^\circ - \cot 15^\circ}$$

$$\frac{2\cot\frac{1}{\alpha} - \cot\frac{1}{\alpha}}{-3\tan\alpha - \cot\frac{1}{\alpha}}$$

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

(۸)

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

$\sin^2 x + \cos^2 x = 1$

$\frac{2}{\sin^2 - \cos^2 x} = 2$ $\quad \frac{2}{1 - \cos^2 x - \cos^2 x} = 2 \rightarrow (1 - 2\cos^2 x) \times 2 = 2$

$\cos^2 x + \sin^2 x = 1$

$\sin^2 x = 1 - \cos^2 x$

$2 - 4\cos^2 x = 2$

$-4\cos^2 x = -1 \rightarrow \cos^2 x = \frac{1}{4}$

$1 + \tan^2 x = 4 \rightarrow \tan^2 = 3$

$1 + \tan^2 x = \frac{1}{\cos^2 x}$

AYLAR

تمرین تستی

(۹) صورت و مخرج $\div \cos^2 x \rightarrow$

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

$$\tan^2 x + 1 = \frac{1}{\cos^2 x}$$

$$2\tan^2 x - 1 = 4$$

$$2\tan^2 x = 5$$

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

(۱۰)

الف) $\cos^2\alpha = \frac{1+\cos 2\alpha}{2} \rightarrow \cos^2\alpha = \left(1+\frac{\sqrt{2}}{2}\right)\times\frac{1}{2} \rightarrow \frac{1^{\times 2}}{2_{\times 2}} + \frac{\sqrt{2}}{4} = \frac{2+\sqrt{2}}{4}$

$$\cos\alpha = \pm\frac{\sqrt{2+\sqrt{2}}}{2}$$

ب) $\sin^2\alpha = \frac{1-\cos 2\alpha}{2} \rightarrow \sin^2\alpha = \frac{1+\frac{\sqrt{2}}{2}}{2} = \left(1+\frac{\sqrt{2}}{2}\right)\times\frac{1}{2} = \frac{1}{2}+\frac{\sqrt{2}}{4} = \frac{2+\sqrt{2}}{4}$

$$\sin 67/5 = \pm\frac{\sqrt{2+\sqrt{2}}}{2}$$