نام و نام خانوادگی ...سید محمد حسین رجائی... پاسخنامه تشریحی تکلیف شماره ۱۶ ... کلاس ...دهم ریاضی A

۱

الف) $27^\circ \longrightarrow (x)\,Rad \qquad \frac{27}{360} = \frac{x}{2\pi} \qquad x = \frac{3\pi}{20} \qquad 27^\circ = \frac{3\pi}{20}\,Rad$

ب) $135^\circ \longrightarrow (x)\,rad \qquad \frac{135}{360} = \frac{x}{2\pi} \Rightarrow x = \frac{45\pi}{36}$

$135^\circ = \frac{45\pi}{36}\,Rad$

ج) $\frac{5\pi}{12}\,rad = x^\circ \qquad \frac{\frac{5\pi}{12}}{2\pi} = \frac{x}{360} = \frac{5}{24} \qquad x = 75^\circ$

د) $\frac{4\pi}{9}\,rad = x^\circ \qquad \frac{\frac{4\pi}{9}}{2\pi} = \frac{x}{360} \Rightarrow x = 80^\circ$

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زاویه‌ی α چهار درجه است

$\frac{125\alpha}{9}\,grad = x^\circ \qquad \frac{\frac{125\alpha}{9}}{400} = \frac{x^\circ}{360} \Rightarrow x = \frac{200}{16} = \frac{25\alpha}{2}$

$\frac{\frac{9\pi}{5}}{2\pi} = \frac{x^\circ}{360} \qquad x^\circ = \frac{45}{2}\alpha^\circ$

$\frac{25}{2}\alpha^\circ + \frac{45}{2}\alpha^\circ + 10\alpha^\circ = 180^\circ$

$45\alpha = 180^\circ \Rightarrow \alpha = 4^\circ$

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الف) $\cos 60^\circ \cos 30^\circ - \sin 60^\circ \sin 30^\circ - \tan 45^\circ + 2\cot 45^\circ$

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

ب) $\frac{\tan^2 30^\circ + \tan^2 45^\circ + \tan^2 60^\circ}{\cot 30^\circ - \cot 60^\circ} = \frac{\frac{1}{3} + 1 + 3}{\sqrt{3} - \frac{\sqrt{3}}{3}} = \frac{\frac{13}{3} \times (\sqrt{3} + \frac{\sqrt{3}}{3})}{(\sqrt{3} - \frac{\sqrt{3}}{3})(\sqrt{3} + \frac{\sqrt{3}}{3})}$

$= \frac{\frac{13\sqrt{3}}{3}\cdot\frac{4}{3}}{\frac{4}{3}\cdot 2} = \frac{13\sqrt{3}}{6}$

$\frac{13\sqrt{3}}{3} + \frac{13\sqrt{3}}{9}$, $\frac{8}{3}$

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$-\sin 30^\circ \times \cos 60^\circ + \cos 30^\circ \sin 60^\circ = \sin^2\theta$

$-\frac{1}{2} \times \frac{1}{2} + \frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2} = \frac{1}{2} \Rightarrow \sin\theta = \pm\frac{\sqrt{2}}{2}$

$\Rightarrow \theta = 45^\circ$ ~~یا 135°~~ (حاده نیست)

θ حاده است

$\tan\theta = \tan 45^\circ = 1$

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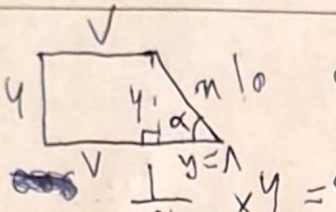
$\frac{2\tan 30^\circ (1 - \tan^2 30^\circ)}{(1 - \cot^2 60^\circ)^2} = \frac{\frac{4\sqrt{3}}{9}}{\frac{4}{9}} = \tan\theta = \sqrt{3}$

($\tan 30^\circ = \frac{\sqrt{3}}{3}$، $\tan^2 30^\circ = \frac{1}{3}$، $\cot^2 60^\circ = \frac{1}{3}$)

$\Rightarrow \theta = 30^\circ = \frac{\pi}{6}$

$\frac{30}{360} = \frac{x}{2\pi} \Rightarrow x = \frac{\pi}{6}$

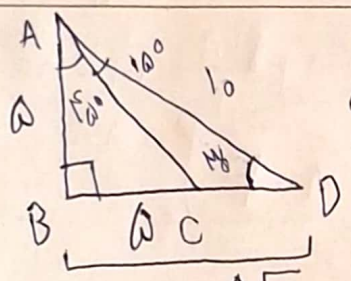
$\frac{\sin\theta}{\cos\theta} = 5 \Rightarrow \sin\theta = 5\cos\theta \Rightarrow \frac{4\sin\theta - \cos\theta}{\sin\theta - 2\cos\theta} = \frac{15\cos\theta - \cos\theta}{5\cos\theta - 2\cos\theta} = \frac{14}{3}$ ۶



$\frac{1}{\sin\alpha} \times 4 = x = \frac{15}{4} \times 4 = 15$

$15^2 - 4^2 = y^2 \Rightarrow y = 8$

محیط $= 7 + 4 + 7 + 8 + 15 = 38$ ۷



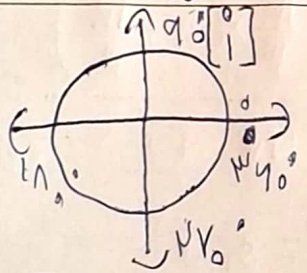
$CD = BD - BC = 5\sqrt{3} - 5 = 5(\sqrt{3}-1)$

$\sin 30 \times 10 = AB = \frac{10}{2} = 5$

$\hat{D} = 180 - 90 - 60 = 30$

$\cos 30 \times 10 = BD = \frac{\sqrt{3}}{2} \times 10 = 5\sqrt{3}$

$\tan 45 \times 5 = BC = 5$



الف) $\theta \uparrow$ $\sin\theta \downarrow$ از ۹۰° دورتر می‌شود ربع ۲ و ۳

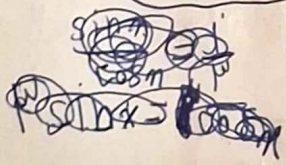
$\cos\theta \downarrow$ به صفر نزدیکتر می‌شود ربع ۳ و ۴

θ در ناحیه سوم است

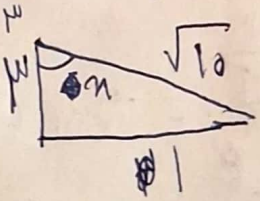
ب) $\theta \uparrow$ $\sin\theta \downarrow$ از ۹۰° دورشده ربع ۲ و ۳

$\cos\theta \downarrow$ از ۰° دورشده ربع ۴ و اول

θ در ناحیه دوم واقع است



$\tan = \frac{1}{3}$ (x)



ولی چون در ربع سوم است $\sin x, \cos x < 0$

$\Rightarrow \begin{cases} \sin x = \frac{\sqrt{10}}{10} \\ \cos x = \frac{3\sqrt{10}}{10} \end{cases}$ ۱۰