آتریسا آقاصالحه

$\frac{D}{180} = \frac{Rad}{\pi}$ $\quad \frac{27}{180} = \frac{x}{\pi} \quad x = \frac{27\pi}{180}$ ① الف)

$\frac{125}{180} = \frac{x}{\pi} \quad x = \frac{125\pi}{180}$ ب)

$\frac{x}{180} = \frac{\frac{5\pi}{12}}{\frac{\pi}{1}} = \frac{5}{12} \quad x = \frac{180 \times 5}{12} = 75^\circ$ ج)

$\frac{x}{180} = \frac{\frac{4\pi}{9}}{\frac{\pi}{1}} = \frac{4}{9} \quad x = \frac{4 \times 180^{20}}{9} = 80^\circ$ د)

$\frac{x}{180} = \frac{a\pi}{8} = \frac{a}{8} \quad x = \frac{180a}{8}^\circ$ $\quad \frac{\frac{125a}{9}}{\frac{200}{1}} = \frac{x'}{180} = \frac{5a}{72}$ ④

$x' = \frac{180^{20} \times 5a}{72_{4}} = \frac{100a}{8} \quad 10a = \frac{10a}{8} \Rightarrow \frac{180a}{8} + \frac{100a}{8} + \frac{10a}{8} =$

$\Rightarrow \frac{290a}{8} = 180 \Rightarrow a = 4$

③ $\cos 60^\circ \cdot \cos 30^\circ - \sin 60^\circ \times \sin 30^\circ - \tan 45 + 2\cot 45^\circ$

$\left(\frac{1}{2} \cdot \frac{\sqrt{3}}{2}\right) - \left(\frac{\sqrt{3}}{2} \cdot \frac{1}{2}\right) = 0 \Rightarrow -1 + 2 = 1$ ① الف)

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

$\left(-\frac{1}{2} \cdot \frac{1}{2}\right) + \left(\frac{\sqrt{3}}{2} \cdot \frac{\sqrt{3}}{2}\right) = \frac{2}{4} = \frac{1}{2} = \sin^2\theta \Rightarrow \sin\theta = \sqrt{\frac{1}{2}} = \frac{\sqrt{2}}{2}$ ②

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

$\frac{2\tan 30^\circ (1 - \tan^2 30^\circ)}{(1 - \cot^2 60^\circ)^2} = \frac{\frac{2}{\sqrt{3}} \times \frac{2}{3}}{\frac{4}{9}} = \frac{9}{4\sqrt{3}} = \frac{3}{\sqrt{3}} = \sqrt{3} = \tan\theta$ ⑤

$\theta = 60^\circ$ $\quad \frac{60}{180} = \frac{x}{\pi} \Rightarrow x = \frac{60\pi}{180}$

برحسب رادیان $x = \frac{\pi}{3}$

$\tan\theta = \frac{\text{مقابل}}{\text{مجاور}} = \frac{۵}{۱}$

$\text{وتر} = \sqrt{۵^۲ + ۱^۲} = \sqrt{۲۶}$

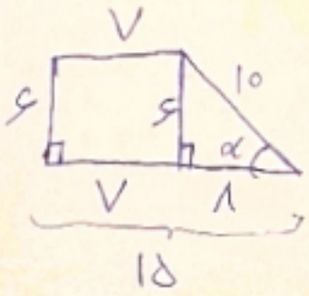
$\sin\theta = \frac{۵}{\sqrt{۲۶}} \quad \cos\theta = \frac{۱}{\sqrt{۲۶}}$

۶

$\frac{۳(\frac{۵}{\sqrt{۲۶}}) - \frac{۱}{\sqrt{۲۶}}}{\frac{۵}{\sqrt{۲۶}} - ۴(\frac{۱}{\sqrt{۲۶}})} = \frac{\frac{۱۴}{\sqrt{۲۶}}}{\frac{۱}{\sqrt{۲۶}}} = ۱۴$

۱۴

۷



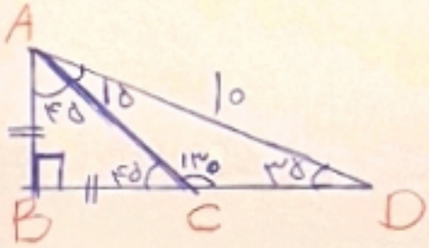
$\sin\alpha = \frac{۶}{۱۰}$

$۱۰^۲ - ۶^۲ = ۸^۲$

محیط $= V + ۶ + ۱۵ + ۱۰ = ۳۸$

۳۸

۸



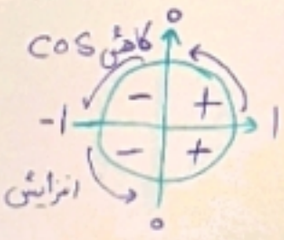
DC = ?

$۱۸۰ - (۹۰ + ۵۵) = ۳۵$

$\frac{AD}{\sin ۱۳۵^\circ} = \frac{DC}{\sin ۱۵^\circ} \Rightarrow DC = ۳,۴$

$\frac{۱۰}{۰,۷۶} \quad \frac{۱۰}{۰,۲۵}$

۹

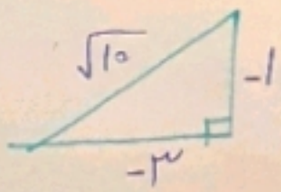


الف) ناحیه سوم

ب) ناحیه دوم

۱۰

$\sin\theta = \frac{-۱}{\sqrt{۱۰}}$



$\sqrt{۱^۲ + ۳^۲} = \sqrt{۱۰}$

$\tan\theta = \frac{۱}{۳}$

$\theta =$ در ناحیه ۳

$\sin\theta = -$

$\cos\theta = -$