

$$\frac{D}{110} = \frac{Rad}{\pi}$$

$$\frac{2V}{110} = \frac{x}{\pi}$$

$$x = \frac{2V\pi}{110}$$

$$\frac{120}{110} = \frac{x}{\pi} \Rightarrow x = \frac{120\pi}{110}$$

$$\frac{x}{110} = \frac{\frac{2\pi}{12}}{\frac{\pi}{1}} = \frac{2}{12} \Rightarrow x = \frac{10}{12} = 10^\circ$$

$$\frac{x}{110} = \frac{\frac{5\pi}{9}}{\frac{\pi}{1}} = \frac{5}{9} \Rightarrow x = \frac{5 \times 110}{9} = 110^\circ$$

$$\frac{x}{110} = \frac{\alpha}{\pi} = \frac{\alpha}{1}$$

$$x = 110\alpha$$

$$\left(\frac{120\alpha}{\frac{1}{9}} \right) = \frac{x'}{110} = \frac{d\alpha}{V2}$$

$$x' = \frac{110 \times d\alpha}{1} = 100\alpha$$

$$100\alpha = \frac{110\alpha}{1} \Rightarrow \frac{110\alpha}{1} + \frac{100\alpha}{1} + \frac{100\alpha}{1} =$$

$$\Rightarrow \frac{110\alpha}{1} = 110 \Rightarrow \alpha = 1$$

$$\cos 90^\circ \cdot \cos 30^\circ - \sin 90^\circ \cdot \sin 30^\circ - \tan 45^\circ + \cot 45^\circ$$

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

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

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

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

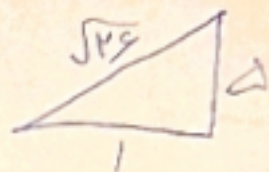
$$\frac{2 \tan 30^\circ (1 - \tan^2 30^\circ)}{(1 - \cot^2 60^\circ)^2} = \frac{\frac{2}{\sqrt{3}} (1 - \frac{1}{3})}{(1 - \frac{1}{3})^2} = \frac{\frac{2}{\sqrt{3}} \cdot \frac{2}{3}}{\frac{4}{9}} = \frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3} = \tan \theta$$

$$\theta = 60^\circ$$

$$\frac{60}{110} = \frac{x}{\pi} \Rightarrow x = \frac{60\pi}{110}$$

$$\sqrt{x = \frac{\pi}{12}}$$

$$\tan \theta = \frac{\text{مقابل}}{\text{مجاور}} = \frac{5}{1}$$

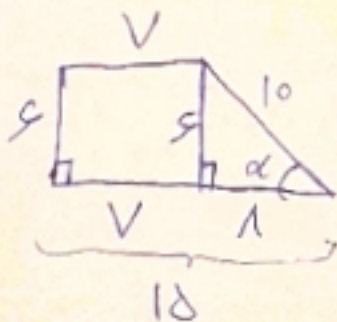


⑥
⑦

$$r = \sqrt{5^2 + 1^2} = \sqrt{26}$$

$$\sin \theta = \frac{5}{\sqrt{26}} \quad \cos \theta = \frac{1}{\sqrt{26}}$$

$$\frac{\frac{15}{\sqrt{26}} - \frac{1}{\sqrt{26}}}{\frac{5}{\sqrt{26}} - 2\left(\frac{1}{\sqrt{26}}\right)} = \frac{\frac{14}{\sqrt{26}}}{\frac{1}{\sqrt{26}}} = 14$$

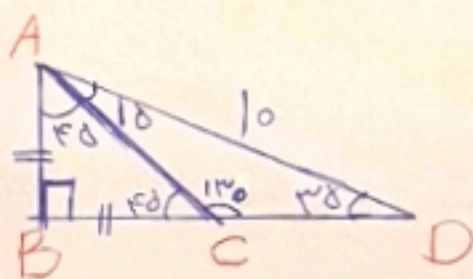


$$\sin \alpha = \frac{6}{10}$$

$$10^2 - 6^2 = 1^2$$

$$\underline{\text{مساحت}} = V + 6 + 10 + 10 = 36$$

⑤
⑦

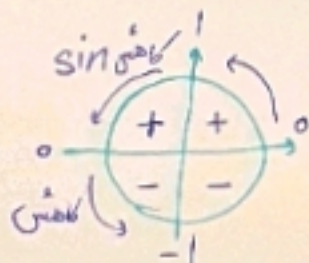
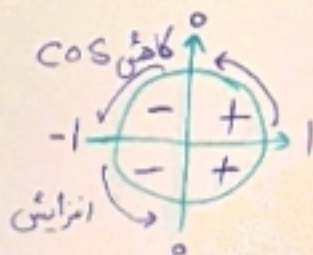


DC = ?

$$110 - (90 + 55) = 35$$

$$\frac{AD}{\sin 135^\circ} = \frac{DC}{\sin 30^\circ} \Rightarrow DC = 14.14$$

⑧

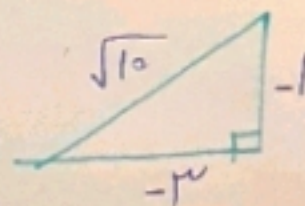


الف) ناحیه سوم

ب) ناحیه دوم

⑨
⑩

$$\sin \theta = \frac{-1}{\sqrt{10}}$$



⑪
⑫

$$\tan \theta = \frac{1}{3}$$

$$\sqrt{1^2 + 3^2} = \sqrt{10}$$

θ = در ناحیه دوم

$$\sin \theta = -$$

$$\cos \theta = -$$