

$$1) \dot{\varphi} = (\alpha) \text{ rad} \Rightarrow \frac{r\dot{\varphi}}{1\text{m}} = \frac{r\alpha}{\pi} \Rightarrow r\alpha, \frac{r\dot{\varphi}\pi}{1\text{m}}, \frac{r\pi}{r_0} = \alpha$$

$$2) \dot{\varphi} = (\alpha) \text{ rad} \Rightarrow \frac{r\dot{\varphi}}{1\text{m}} = \frac{r\alpha}{\pi} \Rightarrow r\alpha, \frac{r\dot{\varphi}\pi}{1\text{m}} = \frac{r\alpha\pi}{\pi}$$

$$3) \frac{\Delta x}{12} \text{ rad}, (\alpha) \Rightarrow \frac{\Delta x}{12} = \frac{\alpha}{1\text{m}} \Rightarrow \alpha, \frac{\Delta x \times 1\text{m}}{12}, \Delta x \times 10, \sqrt{\Delta}$$

$$4) \frac{\pi}{9} \text{ rad}, (\alpha) \Rightarrow \frac{\frac{\pi}{9}}{\frac{\pi}{1}} = \frac{\alpha}{1\text{m}} \Rightarrow \alpha, \frac{\pi \times 1\text{m}}{9}, \pi \times 10, 1\text{m}$$

$$\frac{12\alpha}{9} = \frac{D}{1\text{m}} \rightarrow \frac{D}{12} \alpha, \frac{D}{1\text{m}} \rightarrow D, 12, \Delta \alpha$$

$$\Rightarrow 12\alpha + 12\alpha + 10\alpha, 1\text{m}, \pi \Delta \alpha$$

$$\frac{\alpha\pi}{\frac{\pi}{1}} = \frac{D}{1\text{m}} \rightarrow \frac{\alpha}{1} = \frac{D}{1\text{m}} \rightarrow D = 12, \Delta \alpha$$

$$\Rightarrow \alpha, \frac{1\text{m}}{\Sigma \Delta}, (\pi)$$

$$1) \cos 40^\circ \cos 10^\circ - \sin 40^\circ \sin 10^\circ - \tan 40^\circ + \tan 10^\circ = 1$$

$$2) \frac{\tan 10^\circ + \tan 40^\circ + \tan 50^\circ}{\cot 10^\circ - \cot 40^\circ} = \frac{(\frac{\sqrt{3}}{3})^2 + (1)^2 + (\sqrt{3})^2}{\sqrt{3} - \frac{\sqrt{3}}{3}} = \frac{\frac{1}{3} + 1 + 3}{\frac{2\sqrt{3}}{3}} = \frac{13}{2\sqrt{3}}$$

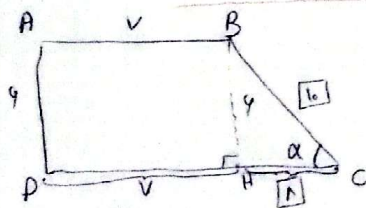
$$\Rightarrow -(\cos 40^\circ) + \sin 40^\circ = \sin \theta \rightarrow -(\frac{1}{3})^2 + (\frac{\sqrt{3}}{3})^2 = -\frac{1}{9} + \frac{3}{9} = \frac{2}{9} = \sin^2 \theta \Rightarrow \theta = 40^\circ$$

$$\tan 40^\circ, 1$$

$$\frac{r \tan 40^\circ (1 - \tan^2 10^\circ)}{(1 - \tan^2 40^\circ)^2} = \frac{r \times \frac{\sqrt{3}}{3} (1 - \frac{1}{3})}{(\frac{1}{3})^2} = \frac{\frac{2\sqrt{3}}{3}}{1 - \frac{1}{3}} = \frac{2\sqrt{3}}{\frac{2}{3}} = \frac{2\sqrt{3}}{3}, \sqrt{3} \tan \theta = \tan 40^\circ$$

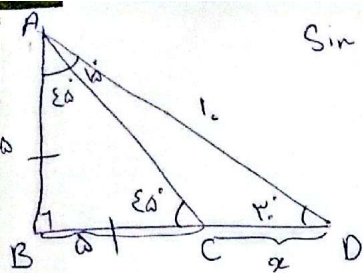
$$\Rightarrow 40^\circ = (90) \text{ rad} \rightarrow \frac{90}{1\text{m}}, \frac{\text{rad}}{\pi} \rightarrow \text{rad}, \frac{90\pi}{1\text{m}}, \frac{\pi}{3}$$

$$\tan \theta, \Delta = \frac{\sin \theta}{\cos \theta} \Rightarrow \sin \theta, \Delta \cos \theta \rightarrow \frac{r(\Delta \cos \theta) - \cos \theta}{\Delta \cos \theta - r \cos \theta} = \frac{14 \cos \theta}{\cos \theta} = 14$$



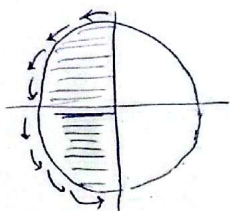
$$\sin \alpha, \frac{10}{10}, \frac{9}{10} = \frac{9}{10} \Rightarrow BC = 10, CH = 10$$

$$\Rightarrow \text{مجموع} = 10 + 10 + 10 + 10 + 10 = 50$$



$$\sin 30^\circ, \frac{AB}{AD}, \frac{AB}{l}, \frac{1}{2} \Rightarrow AB, \underline{\omega} = BC$$

$$\sin 40^\circ, \frac{\sqrt{3}}{2}, \frac{\omega + \alpha}{l} \Rightarrow \omega + \alpha = \omega\sqrt{3} \Rightarrow CD, \alpha, \omega\sqrt{3} - \omega$$



الف) ناصبه سوم ب) ناصبه دوم

$$\tan \alpha = \frac{1}{\sqrt{3}} = \frac{\sin \alpha}{\cos \alpha} \Rightarrow \cos \alpha = \sqrt{3} \sin \alpha, \cos^2 \alpha + \sin^2 \alpha = 1 \Rightarrow 4 \sin^2 \alpha + \sin^2 \alpha = 1 \Rightarrow 5 \sin^2 \alpha = 1$$

$$\Rightarrow \sin \alpha = \pm \sqrt{\frac{1}{5}}$$

چون ابتدای کمان زاویه در ناصبه سوم هست، پس $\sin \alpha$ و $\cos \alpha$ منفی هستند. $\leftarrow$

$$\sin \alpha = -\sqrt{\frac{1}{5}}$$