

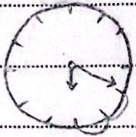
$$f(r_0) + 4 + 2V = 12 + 9 + 2V = 15$$

$$r_0 + \omega = 9 \quad \omega f: r = 2V$$

$$\text{ب) } \alpha = |\omega \omega m - r_0 h| = |\omega \omega (2V) - r_0(r)| = \frac{11}{12} \times \frac{2V}{12} - 9 = 29V - 9 = 29V$$

$$29V - 20V = 15$$

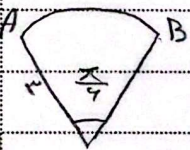
$$\text{الف) } 9:18$$



$$2(r_0) + 12 + 9 = 9 + 12 = 21$$

$$r_0 + \omega = 9 \rightarrow r_0(9) = 12 \quad \frac{12}{9} = 9 \rightarrow 9$$

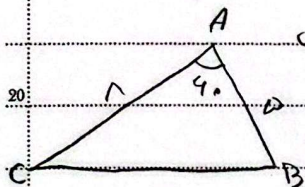
$$\text{ب) } \alpha = |\omega \omega m - r_0 h| = |\omega \omega (12) - r_0(9)| = \frac{11}{12} \times 12 - 12 = |9 - 12| = 3$$



$$\text{الف) } s = \frac{\alpha}{r} R^2 \rightarrow \frac{\pi}{9} \times \frac{1}{r} \times r^2 = \frac{\pi}{9} \times \frac{1}{r} = \frac{\pi}{9}$$

$$\text{ب) } r + r + \frac{\pi}{r} = 9 + \frac{\pi}{r}$$

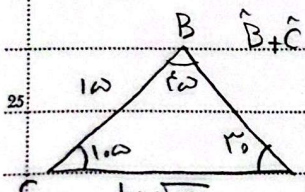
$$\overline{AB} = \alpha R = \frac{\pi}{9} \times r = \frac{\pi}{9}$$



$$\text{الف) } s = \frac{1}{2} ab \sin \alpha \Rightarrow \frac{1}{2} \times 1 \times 1 \times \sin 90 = \frac{1}{2} \times \frac{\sqrt{2}}{2} = \frac{\sqrt{2}}{4}$$

$$\text{ب) } CB = \sqrt{a^2 + b^2 - 2ab \cos \alpha} = \sqrt{1^2 + 1^2 - 2 \times 1 \times 1 \times \frac{1}{2}} = \sqrt{2 - 1} = 1$$

$$b = 1 + 1 + 1 = 3$$



$$\hat{B} + \hat{C} = 180 - \hat{A} = 180 - 90 = 90$$

$$\frac{1}{\sin A} = \frac{1}{\sin B} \rightarrow \frac{1}{\sin 90} = \frac{1}{\sin B} \rightarrow \sin B = 1$$

$$\sin B = \sqrt{2} \sin A \rightarrow \sin B = \sqrt{2} \times \frac{1}{2} = \frac{\sqrt{2}}{2}$$

$$120 - 60 = 60 \rightarrow C = 60 \rightarrow \frac{120}{120} = \frac{\pi}{3} \rightarrow \frac{120\pi}{180} = \frac{2\pi}{3}$$

$$B = 60 = \frac{\pi}{3}$$

$$\frac{\tan(\pi - \alpha) + r \tan(\pi + \alpha)}{\tan(\pi - \alpha) - \tan(\pi + \alpha)} = \frac{-\tan \alpha + r \tan \alpha}{-\tan \alpha - r \tan \alpha} = \frac{r \tan \alpha}{-r \tan \alpha} = -1$$

$$\tan \frac{\pi}{12} = a \quad A = \frac{r \tan 140^\circ + \tan 160^\circ}{r \tan 140^\circ - \tan 160^\circ} = \frac{r \tan(90^\circ - 10^\circ) + \tan(180^\circ - 20^\circ)}{r \tan(180^\circ - 10^\circ) - \tan(90^\circ - 20^\circ)} = \frac{r \cot 10^\circ - \cot 20^\circ}{r \cot 10^\circ + \cot 20^\circ} = \frac{1}{r \cot 10^\circ + \cot 20^\circ}$$

$$\frac{\frac{\pi}{12}}{\frac{\pi}{x}} = \frac{D}{12} \rightarrow \frac{1}{12} = \frac{D}{12} \Rightarrow \frac{1}{12} = 12$$

$$\frac{r \cot \alpha - \cot \alpha}{r \tan \alpha \cot \alpha} = \frac{\cot \alpha}{-r \tan \alpha - \cot \alpha} = \frac{\frac{1}{a}}{-r(a) - \frac{1}{a}} = \frac{1}{ra^2 + 1}$$

$$\frac{\sin \alpha + \cos \alpha}{\sin \alpha - \cos \alpha} + \frac{\sin \alpha - \cos \alpha}{\sin \alpha + \cos \alpha} = \frac{\tan \alpha + 1}{\tan \alpha - 1} + \frac{\tan \alpha - 1}{\tan \alpha + 1} = r$$

$$\frac{\tan^2 \alpha + \tan \alpha + 1}{\tan^2 \alpha - 1} = \frac{r \tan^2 \alpha + r}{\tan^2 \alpha - 1} = \frac{r(\tan^2 \alpha + 1)}{\tan^2 \alpha - 1} = r$$

$$\frac{\tan^2 \alpha + 1}{\tan^2 \alpha - 1} = \frac{r}{r} \rightarrow r \tan^2 \alpha + r = r \tan^2 \alpha - r$$

$$r + r = \tan^2 \alpha \rightarrow \tan^2 \alpha = 2$$

$$\frac{\sin^2 \alpha + r \cos^2 \alpha + 1}{\sin^2 \alpha + r \cos^2 \alpha - 1} = f \rightarrow \frac{-r \cos^2 \alpha + r}{\cos^2 \alpha} = f$$

$$-r \cos^2 \alpha + r = f \cos^2 \alpha$$

$$\sin^2 \alpha - \cos^2 \alpha - \cos^2 \alpha + 1 = -r \cos^2 \alpha + r$$

$$1 - \cos^2 \alpha = r \cos^2 \alpha \rightarrow \cos^2 \alpha = \frac{r}{1+r}$$

$$\sin^2 \alpha = 1 - \frac{r}{1+r} = \frac{1}{1+r}$$

$$\tan^2 \alpha = \frac{\frac{1}{1+r}}{\frac{r}{1+r}} = \frac{1}{r}$$

$$\text{الف) } \cos(r/r, \omega) = \frac{\sqrt{r+\sqrt{r}}}{r}$$

$$r/r = \frac{r}{r} \rightarrow \cos^2(r/r, \omega) = \frac{1 + \cos^2 \omega}{r} \Rightarrow \frac{1 + \frac{\sqrt{r}}{r}}{r} = \frac{r + \sqrt{r}}{r} = \cos^2(r/r, \omega)$$

$$\text{ب) } \sin(4r/r, \omega) = \cos(r/r, \omega)$$

$$\frac{\sqrt{r+\sqrt{r}}}{r}$$