

1) الف)



$$\Delta F \div 2 = 27^\circ$$

$$F \times 30 = 120$$

$$120 + 27 + 9 = 156^\circ$$

$$| \Delta \text{D.M.} - 3.h | = \Delta \text{D.M.}(\Delta F) - 3.(3) = 2.V^\circ$$

2) الف)



$$11 \div 2 = 9$$

$$3 - 11 = 8^\circ$$

$$2 \times 30 = 60$$

$$60 + 12 + 9 = 81^\circ$$

$$| \Delta \text{D.M.} - 3(h) | = \Delta \text{D.M.}(11) - 3.(6) = 11$$

$$3) \text{ الف) } \Rightarrow \frac{\alpha}{r} \cdot R^2 = \frac{\pi}{4} \cdot r = \frac{r\pi}{2}$$

$$\text{ب) } \frac{\pi}{r} = \frac{\alpha \cdot R}{\frac{r\pi}{2}} \Rightarrow \frac{\pi}{r} + 6 = \frac{12 + \pi}{2}$$

$$4) \text{ الف) } = \frac{1}{r} \cdot a \cdot b \cdot \sin A = \frac{1}{r} \cdot 1 \cdot 5 \cdot \frac{\sqrt{2}}{2} = 1 \cdot \sqrt{2}$$

$$\text{ب) } \rightarrow a = \sqrt{c^2 + b^2 - 2bc \cdot \cos A} = \sqrt{20 + 16 - 8 \cdot 2} = \sqrt{8} = 2\sqrt{2}$$

$$\sqrt{1 + 1} = \sqrt{2}$$

$$5) \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} \Rightarrow \frac{15}{\frac{1}{r}} = \frac{10\sqrt{2}}{\sin B} \Rightarrow \sin B = \frac{\sqrt{2}}{2}$$

$$30^\circ \rightarrow \angle B = 30^\circ \Rightarrow 11. - 30 = 1.0$$

E.D.

$$\frac{P}{11.} = \frac{\text{rad}}{\pi} \Rightarrow \frac{1.0}{11.} = \frac{\text{rad}}{\pi} \sim \text{rad} = \frac{\sqrt{2}\pi}{12}$$

$$C = \frac{\sqrt{2}\pi}{12}$$

$$B = \frac{\pi}{2}$$

$$4) \frac{\tan(\pi - \alpha) + r \tan(\pi + \alpha)}{\tan(r\pi - \alpha) - \tan(r\pi + \alpha)} = \frac{-\tan \alpha + r \tan \alpha}{-\tan \alpha - \tan \alpha} = \frac{r \tan \alpha}{-r \tan \alpha} = -1$$

$$5) A = \frac{r \tan 18^\circ + \tan 1 \cdot \omega}{r \tan 18^\circ - \tan 1 \cdot \omega} \quad \frac{\pi}{18} = 18^\circ = \alpha$$

$$= \frac{r \tan(\frac{\pi}{r} - \frac{\pi}{18}) + \tan(\frac{\pi}{r} + \frac{\pi}{18})}{r \tan(\frac{\pi}{r} - \frac{\pi}{18}) - \tan(\frac{\pi}{r} + \frac{\pi}{18})}$$

$$= \frac{r \cot \frac{\pi}{18} - \cot \frac{\pi}{18}}{-r \tan \frac{\pi}{18} - \cot \frac{\pi}{18}} = \frac{\cot \frac{\pi}{18}}{-\frac{r \tan \frac{\pi}{18} + \cot \frac{\pi}{18}}{1}} = \frac{1}{-\frac{r \tan \frac{\pi}{18} + \cot \frac{\pi}{18}}{1}} = -\frac{1}{r \tan \frac{\pi}{18} + \cot \frac{\pi}{18}}$$

$$1) \frac{\sin x + \cos x}{\sin x - \cos x} + \frac{\sin x - \cos x}{\sin x + \cos x} = r$$

$$\frac{\sin^2 x + \cos^2 x + \sin^2 x - \cos^2 x}{\sin^2 x - \cos^2 x} = r$$

$$\frac{1 + \tan^2 x}{1 - \cos^2 x} = r$$

$$\frac{1 + \tan^2 x}{\cos^2 x} = r \Rightarrow 1 + \tan^2 x = r \cos^2 x$$

$$\tan^2 x = \frac{r \cos^2 x - 1}{\cos^2 x} = \frac{r - \sec^2 x}{1} = r - \sec^2 x$$

$$9) \frac{\sin^2 x - r \cos^2 x + 1}{\sin^2 x + r \cos^2 x - 1} = r$$

$$\sin^2 x - r \cos^2 x + 1 = r(\sin^2 x + r \cos^2 x - 1)$$

$$-r \sin^2 x - 1 \cdot \cos^2 x = -2$$

$$-r(1 - \cos^2 x) = -2 + r \cos^2 x - 1 \cdot \cos^2 x = -2$$

$$-r \cos^2 x = -2$$

$$\cos^2 x = \frac{2}{r}$$

$$10) \cos(r\pi, \omega) = \cos(r\pi, \omega) = \frac{1 + \cos(2\omega)}{2}$$

$$11) \sin(4\pi, \omega) = \sin^2 \alpha = \frac{1 - \cos 2\alpha}{2}$$

$$\sin^2(4\pi, \omega) = \frac{1 - \cos(8\pi, \omega)}{2} = \frac{1 - \cos(8\pi, \omega)}{2}$$

$$\cos(8\pi, \omega) = \frac{1 + \cos(2\omega)}{2} = \frac{1 + \cos(2\omega)}{2}$$

$$\cos(2\omega) = \frac{1 + \cos(4\omega)}{2} = \frac{1 + \cos(4\omega)}{2}$$

$$\cos(4\omega) = \frac{1 + \cos(8\omega)}{2} = \frac{1 + \cos(8\omega)}{2}$$