

1) الف] $1 - \sqrt{2} \sin^n = \sqrt{2} \sin^{n-1} \Rightarrow \sqrt{2} \sin^n + \sqrt{2} \sin^{n-1} = 2 \Rightarrow \sin^n + \sin^{n-1} = 1 \Rightarrow \sin^n = 1 - \sin^{n-1}$ (1)

$$n = 2k\pi + \frac{\pi}{2}, n = 2k\pi + \frac{3\pi}{2}$$

→ $\sqrt{2} \sin^n = 1 + (1 - \sqrt{2}) \Rightarrow \sqrt{2} \sin^n + \sqrt{2} = 2 \Rightarrow \sin^n = 1 \Rightarrow n = 2k\pi$

2) الف] $-\cos^n = \sin^n \Rightarrow \sin(-\varepsilon n) = \sin(\frac{\pi}{4} - \varepsilon n) \Rightarrow \frac{\pi}{4} - \varepsilon n = 2k\pi + (-\varepsilon n)$ (2)

$$\Rightarrow n = k\pi - \frac{\pi}{4}$$

$$\Rightarrow \frac{\pi}{4} - \varepsilon n = \frac{\pi}{4} - \varepsilon n = 2k\pi + \pi + \varepsilon n \Rightarrow -4\varepsilon n = 4k\pi + \frac{\pi}{2} \Rightarrow n = \frac{4k\pi}{4} - \frac{\pi}{8} \Rightarrow \frac{k\pi}{1} - \frac{\pi}{8}$$

→ $\sqrt{2} \sin^n + \sqrt{2} \sin(-\varepsilon n) = \sqrt{2} \sin^n + \sqrt{2} \Rightarrow \sin^n - \sin^n = \sqrt{2} \sin^n \Rightarrow -(\cos^n = \sin^n) \Rightarrow \cos^n = \sin^n$

$$\cos(\frac{\pi}{4} - \varepsilon n) = \sin(-\varepsilon n) \Rightarrow -\varepsilon n = 2k\pi + \frac{\pi}{4} - \varepsilon n \Rightarrow -\varepsilon n = 2k\pi + \frac{\pi}{4} + \varepsilon n \Rightarrow -\frac{k\pi}{2} - \frac{\pi}{4} = \frac{k\pi}{2} - \frac{\pi}{4}$$

3) الف] $\frac{\cos^n}{\sin^n} (2\cos^n + 1) = \frac{1}{\sin^n} \Rightarrow \sin^n \neq 0 \Rightarrow \sqrt{2} \sin^n + \sqrt{2} = 1 \Rightarrow 1 - \frac{1}{2} \Rightarrow \cos^n = -\frac{1}{2} \Rightarrow \cos^n = -\frac{1}{2} \Rightarrow \sin^n = \frac{\sqrt{3}}{2}$

$$\cos^n = \frac{1}{2} \Rightarrow n = 2k\pi + \frac{\pi}{3} / n = 2k\pi - \frac{\pi}{3}$$

→ $1 + \sqrt{2} \sin^n - \sqrt{2} \sin(-\varepsilon n) = 2 \Rightarrow -\sqrt{2} \sin^n = \sqrt{2} \sin^n \Rightarrow \cos^n = 0 \Rightarrow \sin^n = 0 \Rightarrow \cos^n = 0 \Rightarrow \sin^n = 0$

$$\Rightarrow \cos^n = 0 \Rightarrow n = k\pi + \frac{\pi}{2} / \sin^n = -\cos^n \Rightarrow n = k\pi - \frac{\pi}{2}$$

4) الف] $(\cos t)(\sin(t - \frac{\pi}{2})) = \cos t + \sin t = \frac{1}{2} \sin(t + \frac{\pi}{2}) = \frac{1}{2} \cos t = \frac{1}{2} \Rightarrow \cos t = \frac{1}{2}$

$$t = 2k\pi \pm \frac{\pi}{3} \Rightarrow n = k\pi \pm \frac{\pi}{3}$$

$$\rightarrow C \cdot \sin(rn - \frac{\pi}{9}) = C \cdot \sin(rn + \frac{\pi}{9}) = rn - \frac{\pi}{9} = rk\pi + \frac{\pi}{9} + rn \times$$

$$rn - \frac{\pi}{9} = rk\pi - rn - \frac{\pi}{9} \Rightarrow rn = rk\pi - \frac{\pi}{9} \Rightarrow n = \frac{rk\pi - \frac{\pi}{9}}{2}$$

$$c) \frac{r \sin(rn) \cdot (rn + \sin rn)}{\sin rn} \cdot \sin rn = C \cdot r \Rightarrow r(C \sin rn + 1 - \sin^2 rn) = C \cdot r \Rightarrow$$

$$r(C \sin rn + 1) = 1 \Rightarrow C \sin rn = 0 \Rightarrow rn = rk\pi + \frac{\pi}{2} \Rightarrow n = rk\pi + \frac{\pi}{2} \Rightarrow \sin rn \neq 0$$

$$4) \tan \frac{n}{3} = \frac{1}{\tan \frac{n}{3}} \Rightarrow \tan \frac{n}{3} = 1 / \tan \frac{n}{3} = -1 \Rightarrow \frac{n}{3} = k\pi + \frac{\pi}{2} \Rightarrow n = 3k\pi + \frac{\pi}{2}$$

v)

$$1 - \sin^2 rn - \sin^2 rn \cdot (1 + \sin^2 rn) \Rightarrow \sin^2 rn = \frac{1}{2} \Rightarrow \sin rn = \pm \frac{1}{\sqrt{2}}$$

$$C \sin rn = 1 \Rightarrow rn = rk\pi + \frac{\pi}{2} \Rightarrow n = rk\pi + \frac{\pi}{2} \Rightarrow \frac{\pi}{2} / \pi / \frac{\omega \pi}{2} / 0 / \pi / \dots$$

$$1) \tan \frac{\pi}{4} = 1 \Rightarrow \tan(\frac{\pi}{4} - n) = \tan \frac{\pi}{4} \Rightarrow rn = k\pi + \frac{\pi}{4} \Rightarrow n = \frac{k\pi}{4} + \frac{\pi}{4}$$

$$\sqrt{(\sin rn + \cos rn)^2} = |\sin rn + \cos rn| = \sqrt{2} \sin rn \Rightarrow \sqrt{2} \sin(rn + \frac{\pi}{4}) = \sqrt{2} \sin rn$$

$$\sin(rn + \frac{\pi}{4}) = \sin(\frac{\pi}{4} - rn) \Rightarrow rn + \frac{\pi}{4} = rk\pi + \frac{\pi}{4} - rn \Rightarrow rn = rk\pi + \frac{\pi}{4} \Rightarrow n = rk\pi + \frac{\pi}{4}$$

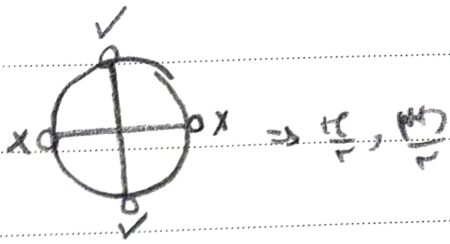
$$\Rightarrow \frac{\pi}{4} / \frac{\omega \pi}{4} \quad \sin rn + \cos rn = \sqrt{2} \sin rn$$

$$\sqrt{2} \sin(rn + \frac{\pi}{4}) = \sqrt{2} \sin rn \Rightarrow \sin(rn + \frac{\pi}{4}) = \sin(rn)$$

$$\frac{\pi}{4} + rn = rk\pi + n + \frac{\pi}{4} \Rightarrow n = rk\pi - \frac{\omega \pi}{4} \Rightarrow \frac{\pi}{4} + rn = rk\pi + n - \frac{\pi}{4} \Rightarrow n = rk\pi - \frac{\omega \pi}{4}$$

$$\frac{\omega \pi}{4} + rn = rk\pi + n - \frac{\pi}{4} \Rightarrow n = rk\pi - \frac{\omega \pi}{4} \Rightarrow \frac{\pi}{4} + rn = rk\pi + n - \frac{\pi}{4}$$

1.1) 1.1)



1.2)

