

۱- وپښا مرونې

$$\cos^2 \lambda = \mu \sin \lambda - 1 \rightarrow 1 - \mu \sin^2 \lambda = \mu \sin \lambda - 1 \rightarrow \mu \sin^2 \lambda + \mu \sin \lambda - \mu = 0$$

$$\sin \lambda = \frac{-\mu \pm \sqrt{\mu^2}}{\mu} = \frac{-\mu \pm \mu}{\mu} = -\frac{\mu}{\mu} = -1$$

$$\rightarrow \sin \lambda = \sin \frac{\pi}{2} \rightarrow \lambda = \mu k \pi + \frac{\pi}{2} \quad \lambda = \mu k \pi + \frac{3\pi}{2}$$

ب) $\mu \cos^2 \lambda + \cos \lambda - \mu = 0 \rightarrow \cos \lambda = \frac{-1 \pm \mu}{\mu} = 1 - \frac{\mu}{\mu} = 0$

$$\cos \lambda = 1 \rightarrow \lambda = \mu k \pi$$

۲- وپښا مرونې

۱) $\sin^2 \lambda \cos^2 \lambda = \sin^2 \lambda - \cos^2 \lambda = -\cos^2 \lambda = \mu \sin^2 \lambda \cos^2 \lambda$

$$\mu \sin^2 \lambda \cos^2 \lambda + \cos^2 \lambda = 0 \rightarrow \cos^2 \lambda (\mu \sin^2 \lambda + 1) = 0 \rightarrow \cos^2 \lambda = 0$$

$$\cos^2 \lambda = 0 \rightarrow \lambda = k\pi + \frac{\pi}{2} \rightarrow \lambda = \frac{k\pi}{\mu} + \frac{\pi}{\mu}$$

$$\sin^2 \lambda = -\frac{1}{\mu} = \sin^2\left(-\frac{\pi}{2}\right) \rightarrow \mu \lambda = \mu k \pi - \frac{\pi}{\mu} \rightarrow \lambda = k\pi - \frac{\pi}{\mu}$$

$$\mu \lambda = \mu k \pi + \frac{\pi}{\mu} \rightarrow \lambda = k\pi + \frac{\pi}{\mu}$$

۲) $\mu \cos^2 \lambda - 1 + \mu \sin \lambda \cos \lambda = 0 \rightarrow \cos^2 \lambda + \sin \lambda \cos \lambda = 0$

$$\mu \lambda = k\pi - \frac{\pi}{\mu} \rightarrow \lambda = \frac{k\pi}{\mu} - \frac{\pi}{\mu}$$

۳- وپښا مرونې

۱) $\frac{\cos \lambda (\mu \cos \lambda + 1)}{\sin \lambda} = \frac{1}{\sin \lambda} \rightarrow \sin \lambda \neq 0 \rightarrow \mu \cos^2 \lambda + \cos \lambda - 1 = 0$

$$\cos \lambda = \frac{-1 \pm \mu}{\mu} = -1 \text{ یا } \frac{1}{\mu} \rightarrow \cos \lambda = -1 \rightarrow \sin \lambda = 0$$

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$$\cos \lambda = \frac{1}{\mu} = \cos\left(\frac{\pi}{\mu}\right) \rightarrow \lambda = \mu k \pi \pm \frac{\pi}{\mu}$$

ب)

$$\rightarrow \lambda = \frac{k\pi}{P} - \frac{\sqrt{P}}{V}$$

$$P \sin^P \lambda - \sin \lambda \cos \lambda + \cos^P \lambda - P \sin^P \lambda - P \cos^P \lambda = 0$$

$$+ \cos^P \lambda + \sin \lambda \cos \lambda = 0 \quad \cos \lambda (\cos \lambda + \sin \lambda) = 0$$

$$\cos \lambda = 0 \rightarrow \lambda = k\pi + \frac{\pi}{2}$$

$$\cos \lambda = -\sin \lambda \quad \bigoplus \rightarrow \lambda = k\pi - \frac{\pi}{4}$$

$$\text{w1) } \cos\left(\frac{\pi}{K} + x\right) \cos\left(x - \frac{\pi}{K}\right) = \frac{1}{K} \rightarrow$$

$$\cos\left(x - \frac{\pi}{K} + \frac{\pi}{K}\right) = -\sin\left(x - \frac{\pi}{K}\right)$$

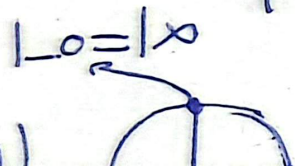
$$\rightarrow \cancel{\frac{1}{K}} \quad \frac{1}{K} \sin\left(x - \frac{\pi}{K}\right) = -\frac{1}{K} \rightarrow \cos \mu x = \frac{1}{\mu} \rightarrow \mu x = \mu k \pi \pm \frac{\pi}{4}$$

$$-\cos \mu x$$

$$\rightarrow +\sin\left(x - \frac{\pi}{K}\right) \cos\left(x - \frac{\pi}{K}\right) = -\frac{1}{K}$$

$$\cos \mu x = \frac{1}{\mu} \rightarrow \mu x = \mu k \pi \pm \frac{\pi}{4}$$

$$\rightarrow x = k \pi \pm \frac{\pi}{4}$$



$$4) \cos(k_n - \frac{\pi}{4}) = -\cos(\frac{\pi}{4} - k_n) = \cos(\pi - (\frac{\pi}{4} - k_n))$$

$$\rightarrow \cos(k_n - \frac{\pi}{4}) = \cos(\frac{\pi}{4} + k_n) \rightarrow k_n - \frac{\pi}{4} = k\pi + \frac{\pi}{4} + k_n \quad \times$$

$$\rightarrow k_n - \frac{\pi}{4} = k\pi - k_n - \frac{\pi}{4} \rightarrow k_n = k\pi - \frac{\pi}{2}$$

$$\rightarrow k = \frac{k\pi}{\pi} - \frac{\pi/2}{\pi}$$

ب)

-3

$$\frac{\mu \sin \mu x \cos \mu x + \sin \mu x}{\sin \mu x} = \cos \mu x \rightarrow \mu \sin \mu x \cos \mu x + \sin \mu x = \sin \mu x \cos \mu x$$

$$\rightarrow \sin \mu x \cos \mu x + \sin \mu x = 0 \rightarrow \sin \mu x (\cos \mu x + 1) = 0 \rightarrow \sin \mu x = 0$$

$$\cos \mu x = -1 \rightarrow \mu x = \mu k\pi + \pi \rightarrow x = k\pi + \frac{\pi}{\mu}$$

UUE

-4

$$\frac{\sin \frac{\pi}{\mu}}{1 + \cos \frac{\pi}{\mu}} = \tan \frac{\pi}{\mu}$$

$$\frac{1}{\sin \frac{\pi}{\mu}} + \frac{\cos \frac{\pi}{\mu}}{\sin \frac{\pi}{\mu}} = \frac{1 + \cos \frac{\pi}{\mu}}{\sin \frac{\pi}{\mu}} = \cot \frac{\pi}{\mu}$$

$$\rightarrow \tan \frac{\pi}{\mu} = \frac{1}{\tan \frac{\pi}{\mu}} \rightarrow \tan \frac{\pi}{\mu} = \pm 1$$



$$\frac{\pi}{\mu} = \frac{k\pi}{\mu} + \frac{\pi}{\mu}$$

$$\rightarrow x = \mu k\pi + \pi \rightarrow x = \pi, -\pi, \dots \rightarrow \mu\pi$$

-5

$$\cos^2 \mu x - \sin^2 \mu x \cos^2 \mu x = 1 \rightarrow -\sin^2 \mu x \cos^2 \mu x = \sin^2 \mu x$$

$$\rightarrow \sin^2 \mu x (1 + \cos^2 \mu x) = 0 \rightarrow \sin \mu x = 0 \rightarrow x = k\pi$$

$$\cos^2 \mu x = -1 \rightarrow \mu x = \mu k\pi + \pi \rightarrow x = \mu \frac{k\pi}{\mu} + \frac{\pi}{\mu} \rightarrow x = 0, \pi, \mu\pi, \frac{\pi}{\mu}, \frac{2\pi}{\mu}, \dots \rightarrow @$$

-1

$$\frac{1 - \tan \mu x}{1 + \tan \mu x} = \tan\left(\frac{\pi}{\mu} - \mu x\right) = \tan \mu x \rightarrow$$

$$\mu x = k\pi + \frac{\pi}{\mu} - \mu x \rightarrow \mu x = k\pi + \frac{\pi}{\mu} \rightarrow x = \frac{k\pi}{\mu} + \frac{\pi}{\mu}$$

-9

$$1 + \sin \mu x + \cos \mu x \rightarrow 1 + \sin \mu x = \mu \cos \mu x$$

$$\sin \mu x + \cos \mu x \rightarrow \frac{\sin^2 \mu x - \cos^2 \mu x}{-\cos \mu x} + \sin \mu x = 0$$

$$\rightarrow \sin \mu x = \cos \mu x \rightarrow \cos \mu x = \cos\left(\frac{\pi}{\mu} - \mu x\right)$$

$$\rightarrow \mu x = \mu k\pi + \frac{\pi}{\mu} - \mu x \rightarrow 4x = \mu k\pi + \frac{\pi}{\mu} \rightarrow x = \frac{k\pi}{\mu} + \frac{\pi}{4\mu}$$

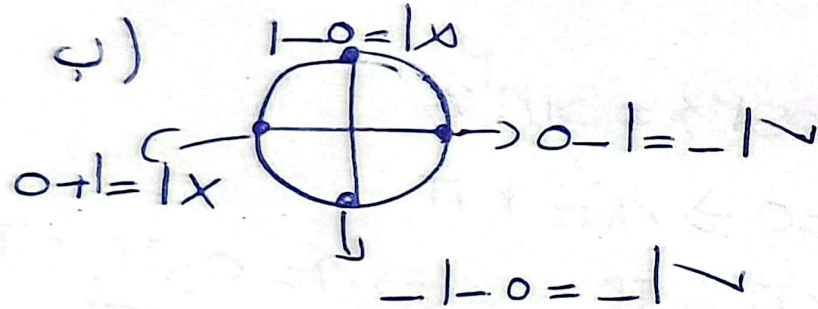
$$\mu x = \mu k\pi - \frac{\pi}{\mu} + \mu x \rightarrow \mu x = \mu k\pi - \frac{\pi}{\mu} \rightarrow x = k\pi - \frac{\pi}{\mu}$$

$$x = \frac{\pi}{\mu}, \frac{2\pi}{\mu}, \frac{3\pi}{\mu}, \frac{4\pi}{\mu}$$

$$\text{c) } \sin^n n - \cos^n n = (\sin^n n - \cos^n n) = -\cos^n n = 1$$

-1e

$$\cos^n n = -1 \rightarrow n = k\pi + \pi \rightarrow n = k\pi + \frac{\pi}{p} \rightarrow \frac{\pi}{p}, \frac{4\pi}{p}$$



$$0, \frac{4\pi}{p}, \pi$$