

$$\cos 5x \cdot \cos x = \cos 4x$$

$$\frac{\cos(5x-x) + \cos(x+x)}{2} = \cos 4x$$

$$\cos 4x + \cos 6x = 2\cos 4x$$

$$\cos 6x - \cos 4x = 0$$

$$-2\sin \frac{6x+4x}{2} \cdot \sin \frac{6x-4x}{2} = 0$$

$$-2\sin 5x \cdot \sin x = 0$$

$$\begin{cases} \sin 5x = 0 \\ \sin x = 0 \end{cases} \begin{cases} 5x = \pi k, k \in \mathbb{Z} \\ x = \pi k, k \in \mathbb{Z} \end{cases} \begin{cases} x = \frac{\pi k}{5}, k \in \mathbb{Z} \\ x = \pi k, k \in \mathbb{Z} \end{cases}$$

$$\sqrt{3}\cos 5x - \sin 5x = \sqrt{3}$$

$$a\cos x + b\sin x = \sqrt{a^2+b^2} \sin\left(x + \arcsin \frac{b}{\sqrt{a^2+b^2}}\right)$$

$$\sqrt{a^2+b^2} = \sqrt{3+1} = 2$$

$$2\sin\left(x - \frac{\pi}{6}\right) = \sqrt{3}$$

$$\sin\left(x - \frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}$$

$$x - \frac{\pi}{6} = (-1)^k \cdot \frac{\pi}{3} + \pi k, k \in \mathbb{Z}$$

$$x = (-1)^k \cdot \frac{\pi}{3} + \frac{\pi}{6} + \pi k, k \in \mathbb{Z}$$

$$x = (-1)^k \cdot \frac{\pi}{15} + \frac{\pi}{30} + \frac{\pi k}{5}, k \in \mathbb{Z}$$