

2024 September 16

$$x(t) = \cos\left(2\pi 10000t - \frac{\pi}{3}\right)$$

$F_s = 8000$

$$x[n] = \cos\left(2\pi 10000 \left(\frac{n}{8000}\right) - \frac{\pi}{3}\right)$$

$$1. \cos\left(\frac{2\pi n}{8} - \frac{\pi}{3}\right) \quad 4. \cos\left(\frac{10\pi n}{8} - \frac{\pi}{3}\right)$$

$$2. \cos\left(\frac{6\pi n}{8} - \frac{\pi}{3}\right) \quad 5. \cos\left(\frac{10\pi n}{8} + \frac{\pi}{3}\right)$$

$$3. \cos\left(\frac{2\pi n}{8} + \frac{\pi}{3}\right) \quad 6. \cos\left(\frac{6\pi n}{8} + \frac{\pi}{3}\right)$$

$$x[n] = \cos\left(\frac{20\pi n}{8} - \frac{\pi}{3}\right)$$

$$= \cos\left(\phi n - \frac{\pi}{3}\right) = \cos\left((2\pi - \phi)n + \frac{\pi}{3}\right)$$

$$= \cos\left((\phi - 2\pi)n - \frac{\pi}{3}\right)$$

$$= \cos\left(\frac{(16-20)\pi n}{8} + \frac{\pi}{3}\right) = \cos\left(-\frac{4\pi n}{8} + \frac{\pi}{3}\right)$$

$$= \cos\left(\frac{(20-16)\pi n}{8} - \frac{\pi}{3}\right) = \cos\left(\frac{4\pi n}{8} - \frac{\pi}{3}\right)$$

