Micro Quiz #1

Name:

Please choose a secret 5-digit number: (- - - - -). We will use it in place of your names to post your homework/quiz/midterms/final grades anonymously. You only need to do this once.

Let \( x(t) = \cos \left( \frac{\pi}{2} t \right) - e^{j \omega t} \)

Compute the fundamental frequency, the fundamental angular frequency, and the fundamental period.

\[ x_1(t) = \cos \frac{\pi}{2} t ; \quad \omega_1 = \frac{n}{2} ; \quad \frac{\omega_1}{2\pi} = \left( \frac{\pi}{2} \right) \left( \frac{2\pi}{n} \right) = \frac{1}{4} \]

\[ x_2(t) = -e^{j \omega t} \quad \omega_2 = \pi ; \quad \frac{\omega_2}{2\pi} = \frac{\pi}{2\pi} = \frac{1}{2} \]

\[ \frac{1}{\omega_1} = T_1 = 4 \]

\[ \frac{1}{\omega_2} = T_2 = 2 \]

\[ T_{sum} = kT_1 = eT_2 \Rightarrow 4k = 2e \]

\[ \Rightarrow k = 1, e = 2, T_{sum} = 4 \]

\[ \omega_{sum} = (2\pi) \frac{1}{4} = \frac{n}{2} \]

\[ \frac{\omega_{sum}}{2\pi} = \frac{1}{4} \]