

PROBLEM:

Define $x(t)$ as

$$x(t) = \sqrt{2} \cos(\omega_0 t + 3\pi/4) + \cos(\omega_0 t + \pi/2)$$

- Find a complex-valued signal $z_1(t)$ such that $\Re\{z_1(t)\} = \sqrt{2} \cos(\omega_0 t + 3\pi/4)$.
- Find a complex-valued signal $z(t)$ such that $x(t) = \Re\{z(t)\}$. Simplify $z(t)$ as much as possible, so that you can identify its complex amplitude.
- Assume that $\omega_0 = 0.2\pi$ rad/sec. Make a plot of $\Re\{(-1 + j)e^{j\omega_0 t}\}$ over the range $-10 \leq t \leq 10$ secs. How many periods are included in the plot?