Problem 1. 10.6 – I found the graph to be ambiguous – assume the period of the function is 200 μs.

Problem 2. 10.13

Problem 3. 10.14

Problem 4. 10.18

Problem 5. 10.25

Problem 6. (This problem is not particularly hard, but will be useful for Monday’s lecture). Consider the complex (phasor) quantity:
\[ X = \frac{1}{1 + \frac{j\omega}{\omega_0}} = |X| e^{j\theta} = |X| \angle \theta \]

Find an approximation for \(|X|\) (the magnitude of X) when
a. \( \omega \to 0 \)
b. \( \omega = \omega_0 \)
c. \( \omega \gg \omega_0 \) Note: for this problem I don’t want the trivial answer that as \( \omega \to \infty, |X| \to 0 \).
Instead, assume only that \( \omega \gg \omega_0 \), or \( \omega / \omega_0 \gg 1 \).

Find an approximation for \( \angle \theta \) (the angle of X) when

d. \( \omega \to 0 \)
e. \( \omega = \omega_0 \)
f. \( \omega \to \infty \)