PROBLEM:

For the following short answer questions, write your answers in the space provided or circle the correct answer:

(a) The periodic signal $x(t)$ has a spectrum containing frequency components at $f = 0, \pm 2$ and ± 2.4 Hz. Determine the *fundamental period,* i.e., the shortest possible period. Make sure your answer has the correct units.

(b) **TRUE** or **FALSE**: "If the signal $x(t)$ is a sinusoid and its spectrum has frequency components at $f = \pm 55$ Hz, then the signal $y(t) = x^2(t)$ has frequency components at the same frequencies."

(c) Circle the correct answer: When you add $2\cos(2t + 3\pi/4) + 3\cos(2t + \pi/3)$ the maximum value of the resulting signal is:
(A) equal to 0, (B) equal to 5, (C) greater than 5, (D) less than 5, but not 0.

(d) In the figure below two sinusoidal signals are shown. Which one has a phase of $+\pi/3$?
Circle the correct answer: $\mathbf{x_1(t)}$ or $\mathbf{x_2(t)}$.
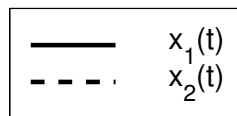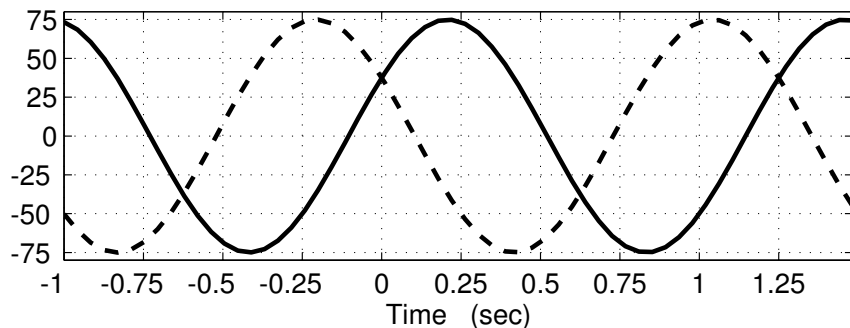
(e) In the figure above both sinusoidal signals have the same frequency. What is the frequency (ω_0) in radians/sec ? Circle the correct answer.
(A) 2.5π (B) 1.25π (C) 1.25 (D) $\pi/3$ (E) 1.6π