PROBLEM:

Each of the following signals may be simplified, and expressed as a single sinusoid of the form: $A\cos(\omega t + \phi)$. For each signal, draw a vector diagram of the complex amplitudes (phasors), and use vector addition to <u>estimate</u> the amplitude A and phase ϕ of the sinusoid. Then use the phasor addition theorem to find the exact values for A and ϕ.

(a) $x_a(t) = 3\cos(388\pi t - 4\pi/3) + \cos(388\pi t + 3\pi/4)$

(b) $x_b(t) = \sqrt{2}\cos(12.6\pi t + 11\pi) + 2\cos(12.6\pi t - 12.5\pi) + \sqrt{3}\cos(12.6\pi t + 38\pi)$

(c) $x_c(t) = \cos(60\pi t + 3\pi/4) + \cos(60\pi t + 5\pi/4) + 2\cos(60\pi t - \pi/4) + 2\cos(60\pi t + \pi/4)$