## 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 estimate the amplitude $A$ and phase $\phi$ of the sinusoid. Then use your calculator or MATLAB and the phasor addition theorem to find the exact values for $A$ and $\phi$.

(a) $x_a(t) = 2\cos(400\pi t + 3\pi/4) + \sqrt{2}\cos(400\pi t)$

(b) $x_b(t) = 4\cos(20\pi t + 7\pi) + 5.5\cos(20\pi t - 2.5\pi) + 6\cos(20\pi t + \pi/4)$

(c) $x_c(t) = 100\cos(120\pi t - \pi/6) + 100\cos(120\pi t - 5\pi/6) + 100\cos(120\pi t + \pi/2)$