PROBLEM:

Simplify the following and give the answer as a single sinusoid: $x(t) = A\cos(\omega t + \phi)$. Draw the vector diagram of the complex amplitudes (phasors) to show how you obtained the answer.

(a) $x_a(t) = \cos(400\pi t - \pi/3) + \cos(400\pi t + \pi/3)$

(b) $x_b(t) = -\cos(100\pi t) + \sqrt{2}\cos(100\pi t - \pi/4) + \sqrt{2}\cos(100\pi t + \pi/4)$

(c) $x_c(t) = \sqrt{2}\cos(50t + \pi/2) + \sqrt{2}\cos(50t) + 2\cos(50t - \pi/3)$