PROBLEM:

Define $x(t)$ as

$$x(t) = 7\cos(100\pi t - 3\pi/4) + 5\cos(100\pi(t + 0.005)).$$

(a) Find a complex-valued signal $z(t) = Xe^{j\omega_0 t}$ such that $x(t) = \Re\{z(t)\}$. Simplify $z(t)$ as much as possible, so that you can identify its complex amplitude. Give the numerical values of X and ω_0.

(b) Make a plot of $\Re\{(1 + j\sqrt{3})e^{j20\pi t}\}$ over the range $-0.1 \leq t \leq 0.1$ secs. How many periods are included in the plot?