PROBLEM:

In the analysis of the beating tones, the problem can be expressed as the sum of two rotating phasors:

$$x(t) = e^{j\omega_\circ t} + 0.7e^{j(\omega_\circ+\delta)t} = e^{j\omega_\circ t}\left(1 + 0.7e^{j\delta t}\right)$$

(a) For the term in parentheses, $\left(1 + 0.7e^{j\delta t}\right)$, sketch a phasor diagram to show the rotation as a function of t.

(b) Derive an algebraic expression for the magnitude-squared of the term $\left(1 + 0.7e^{j\delta t}\right)$. Since the magnitude-squared is *purely real*, your answer for this part should contain no imaginary terms.

(c) From either the diagram in part (a) or the formula in part (b) make a plot of the magnitude (or magnitude-squared) of the term $\left(1 + 0.7e^{j\delta t}\right)$ versus t.