PROBLEM:

Solve the following simultaneous equations via the phasor method. Is the answer for A_1, A_2, ϕ_1, ϕ_2 unique? Provide a geometrical (phasor) diagram to explain the answer.

$$\cos(\omega_0 t + 3\pi/4) = 4A_1 \cos(\omega_0 t + \phi_1) - 3A_2 \cos(\omega_0 t + \phi_2)$$
$$\sin(\omega_0 t) = 3A_1 \cos(\omega_0 t + \phi_1) + 4A_2 \cos(\omega_0 t + \phi_2)$$