PROBLEM:

For both parts below draw a | phasor diagram |.

(a) Solve for $x[n]$ in the following equation:

$$x[n] - 3\cos(13n + 5\pi/3) = 5\cos(13n + 8\pi/3)$$

Express $x[n]$ in the form $x[n] = A\cos(\omega_0 n + \phi)$

(b) Use the idea of a "rotating phasor" to find a solution to

$$y[n] = \tfrac{1}{2}y[n-1] + 7\cos(\tfrac{1}{2}\pi n + \pi/4) \qquad \text{for all } n$$

Express the answer for $y[n]$ in the form $y[n] = A\cos(\omega_0 n + \phi)$. Do NOT assume that $y[n] = 0$ for $n < 0$.
Show the vector diagram of the phasor addition for the fixed value of $n = 0$.