PROBLEM:

Define $x[n]$ as

$$x[n] = 4\cos(\hat{\omega}_0 n) + 2\cos(\hat{\omega}_0 n + \pi/3) + 2\cos(\hat{\omega}_0 n + 5\pi/3)$$

(a) Express $x[n]$ in the form $x[n] = A\cos(\hat{\omega}_0 n + \phi)$

(b) Draw a vector diagram of the phasor addition used to solve part (a).

(c) Use the idea of a "rotating phasor" to solve

$$y[n] = y[n-1] + 4\cos(\hat{\omega}_0 n)$$

when $\hat{\omega}_0 = \pi/3$. Express the answer for $y[n]$ in the form $y[n] = A\cos(\hat{\omega}_0 n + \phi)$.