

## PROBLEM:

For both parts below draw a phasor diagram.

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

$$x[n] + 2 \cos(\hat{\omega}_0 n + 5\pi/4) + 2 \cos(\hat{\omega}_0 n + 7\pi/4) = 0$$

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

- (b) Use the idea of a “rotating phasor” to find a solution to

$$y[n] = -y[n - 2] + 3 \cos(\hat{\omega}_0 n - \pi/2) \quad \text{for all } n$$

when  $\hat{\omega}_0 = \pi/4$ . Express the answer for  $y[n]$  in the form  $y[n] = A \cos(\hat{\omega}_0 n + \phi)$ . Show the vector diagram of the phasor addition for a fixed value of  $n$ .