

PROBLEM:



The frequency response of the filter above is

$$\mathcal{H}(\hat{\omega}) = \cos\left(\frac{1}{2}\hat{\omega}\right)e^{-j\hat{\omega}}$$

If the input signal is $x[n] = 7 + 2\cos(0.5\pi n + \pi)$ for $-\infty < n < \infty$, determine a simple mathematical expression for the output signal $y[n]$.

$y[n] =$
