

PROBLEM:

A linear time-invariant system has system function

$$H(z) = (1 + z^{-2})(1 - z^{-1} + z^{-2})$$

- (a) Determine the impulse response of this system.
- (b) The input to this system is

$$x[n] = 3 + 99\delta[n] + 20 \cos(\pi n/3)$$

Determine the output of the system $y[n]$ corresponding to the above input $x[n]$. Give an equation for $y[n]$ that is valid for all n . (*Note: This is an easy problem if you approach it correctly!*)