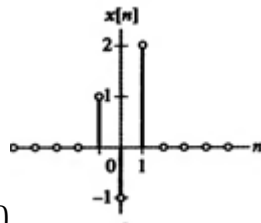


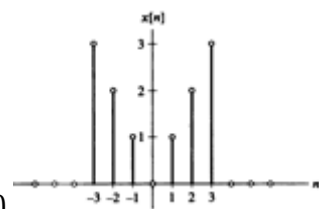
EE 470 – Extra Practice Problem Set #4

1. Determine the z-transform of the following signals:

(a) $x[n] = e^{-2n} \cdot u[n]$



(b)



(c)

2. Determine the inverse z-transform of the following function:

(a) $X(z) = 1 - z^{-1} + z^{-3}$

(b) $X(z) = \frac{1+z^{-2}}{2+3z^{-1}+z^{-2}}$

(c) $X(z) = \frac{z^{-1}}{z^{-3}(1-0.5z^{-1})}$

3. Obtain (a) the impulse response and (b) the unit step response of the discrete-time system defined by the following difference equation:

$$y[n] = 0.5 y[n - 1] + 3 x[n] - x[n - 1] \quad , \quad y[-1] = 0$$