EE 3213 Homework 5
Due March 4, 1999

1. Find the impulse response for each of the following discrete-time systems:

a) \( y[n] + 0.2y[n-1] = x[n] - x[n-1] \)

b) \( y[n] + 1.2y[n-1] = 2x[n-1] \)

c) \( y[n] = 0.24(x[n] + x[n-1] + x[n-2] + x[n-3]) \)

d) \( y[n] = x[n] + 0.5x[n-1] + x[n-2] \)

2. Perform the following convolutions, \( x[n]*v[n] \)

a) \( x[n] = u[n] - u[n-4], \ v[n] = 0.5^n u[n] \)

b) \( x[n] = [1 4 8 2]; \ v[n] = [0 1 2 3 4] \) (the sequences both start at \( n=0 \))

c) \( x[n] = u[n], \ v[n] = 2(0.8)^n u[n] \)

3. Find the z transform of the following signals:

a) \( x[n] = u[n] - u[n-4] \)

b) \( x[n] = 0.5^n u[n] \)

c) \( x[n] = [1 4 8 2] \)

d) \( x[n] = [0 1 2 3 4] \)

e) \( x[n] = 2(0.8)^n u[n] \)