EE 451: Homework 2

1. Using MATLAB generate the following signal

$$x(n) = \sin\left(\frac{\pi}{8}n\right) \tag{1}$$

for $0 \leq n \leq 1000$.

   (a) Add zero mean Gaussian noise to $x(n)$ with power 0.1 to generate a new signal $y(n)$.

   (b) Pass the signal $y(n)$ through the following filter

$$z(n) = \frac{1}{100.5}[y(n) - y(n-2)] + 1.8293z(n-1) - 0.9801z(n-2) \tag{2}$$

   (c) Plot $x(n)$, $y(n)$ and $z(n)$.

   (d) Was the filter used effective, why or why not?

2. #2.1 from textbook

3. #2.19 from textbook

4. #2.24 from textbook