## ECE 341 - Homework #4

Binomial and Uniform Distributions. Due Tuesday, May 27th

## **Binomial Distribution**

Assume you toss a coin with a probability of a heads being 0.8

$$X(z) = \left(\frac{0.2z + 0.8}{z}\right)$$

- 1) Determine the probability of tossing 6 heads in 8 tosses
- 2) Determine the probability distribution when tossing this same coin 8 times
  - pdf
  - mean
  - standard deviation

NOAA has been keeping track of world weather for the past 137 years. 9 of the last 10 years have been the hottest on record.

3a) What is the probability of any given year being one of the 10 hottest on record (i.e. what is p?)

3b) What is the probability of 9 of the last 10 years being the hottest on record? (i.e. toss a coin and get 9 heads out of 10 tosses)

## **Uniform Distribution**

Assume a fair six-sided die:

$$Y(z) = \left(\frac{1}{6}\right) \left(\frac{z^{5} + z^{4} + z^{3} + z^{2} + z + 1}{z^{5}}\right)$$

- 4) Asume you sum four dice (4d6). Determine the
  - pdf
  - mean, and
  - standard deviation
- 5) Asume you sum sixteen dice (16d6). Determine the
  - pdf
  - mean, and
  - standard deviation