Assignment 0: Review of Probability – *due August 21st*

∼ LET THE FUN BEGIN!

From Green Ross:
Do Exercises 1.3, 1.31, 1.43, 2.33, 2.34 of Chapter 1.

1.3 A coin is to be tossed until a head appears twice in a row. What is the sample space for this experiment? If the coin is fair, what is the probability that it will be tossed exactly four times?

1.31 What is the conditional probability that the first die is six given that the sum of the dice is seven?

1.43 Suppose we have ten coins which are such that if the ith one is flipped then heads will appear with probability $i/10, i = 1, 2, \ldots, 10$. Given that one of the coin is randomly selected, flipped and it shows head, what is the probability that it was the fifth coin?

2.33 Let X be a random variable with probability density function (PDF)

$$f(x) = \begin{cases} c(1-x^2), & -1 < x < 1 \\ 0, & \text{otherwise} \end{cases}$$

(a) What is the value of c?

(b) What is the cumulative distribution function (CDF) of X?

2.34 Let the probability density function (PDF) of X be given by

$$f(x) = \begin{cases} c(4x-2x^2), & 0 < x < 2 \\ 0, & \text{otherwise} \end{cases}$$

(a) What is the value of c?

(b) Compute $\mathbb{P}(1/2 < X < 3/2)$.