**Math 180 Fall, 2014 Assignment 7**

This assignment is due Tuesday, October 28.

Assume that the Kansas City Royals and San Francisco Giants are evenly matched – the probability of each winning a particular game in the World Series is .5 – and that this does not vary with the game. What is the probability that the series will be decided in exactly 4 games? In exactly 5? In exactly 6? In exactly 7?

Answer the same question under the assumption that your favorite team in the series (you don’t have to tell me which you favor unless you want to!) has a probability of .6 of winning in each game.

If the teams are evenly matched then each has probability of .5 of becoming the champion of baseball (for this year). Suppose that the better team has a probability of .6 of winning any given game. What is the probability now that it will be the champion?

Challenge problem: A fishbowl contains 365 slips of paper, on each of which is written one of the days of the year, all different (Someone has torn apart a calendar and dropped the pieces in the bowl.) Every day of the year one slip is chosen, returned to the bowl, and the bowl is stirred. If the slip chosen is your birthday then you get a KitKat. Show that the end of the year the probability that (sadly) you never got a KitKat is the same is the present value of 1 (dollar?) one year from today if the interest rate is 100% compounded daily, and that is approximately 1/e, where e =2.718…. is Euler’s constant. (Do this correctly and I’ll give you a miniature KitKat, in addition to credit for the problem, as a consolation prize.)

*The catch: In all these problems you must show your work, or at least how you got your answer, even if you use a computer on online calculator.*