BF550: Fall 2022
Problem Set 3 is due by 12:20 pm on Monday, October 24

Submission instructions
Follow the same submission instructions as before.

Problem 1
Consider a one-dimensional random walker that can move every second. With probability $p_l = 1/3$ it moves to the left, with probability $p_r = 1/3$ it moves to right, and with probability $p_s = 1/3$ it rests/stays and does not move. Assuming at time $t = 0$, the random walker is at $x = 0$, plot the probability density function and the cumulative probability function for $t = 10$, $t = 100$, and $t = 1000$ seconds. Make just two plots; each showing all three time points. Remember that you need to simulate random walks many times to get good statistics. Make the same two plots for $p_l = 0$, $p_r = 1/2$, and $p_s = 1/2$. Do you understand why these plots look different? The plots that you make should be designed well. For example, they should label curves, axes, etc.