# assignment8

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## 1 Bicycle

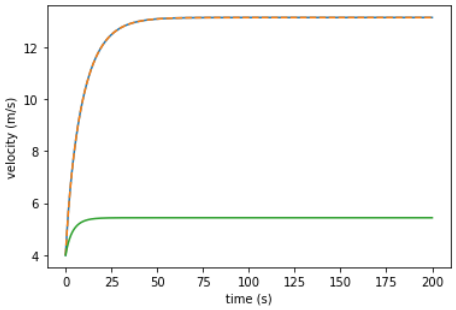


Figure 1: 3 Bicycle simulations: with drag (blue), with viscous drag (dotted), and with an incline (green)

This graph shows all 3 plots of the simulation of a bicycle. The viscous drag only accounts for a very small portion of the drag, which is why the two drag lines are nearly overlaid, but an incline has a very severe effect on the terminal velocity of this simulation.

## 2 Random Walkers

I expect that across the runs, the mean squared value would continue to climb as the extrema contribute very large values to the average and the minima at the center only provide a single extra number to divide by in the denominator, and this is what we see with the value climbing to around 68-70 on several random runs. The mean value, on the other hand, should stay at or near 0 as the law of large numbers takes over and the normal distribution starts to take shape.

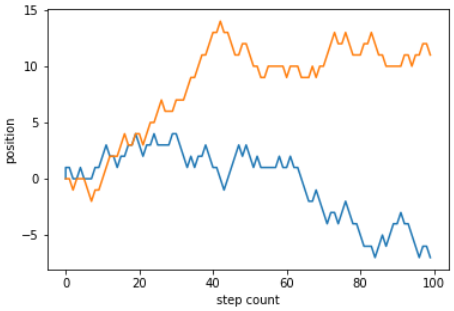


Figure 2: The path of 2 random walks of 100 steps each

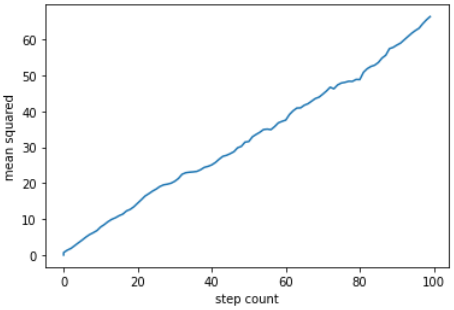


Figure 3: The mean squared value of 500 walks at each step of the walk