Assignment 8

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1 Cycling with Drag

This program was designed to model the velocity of a person riding a bicycle while including the drag term.
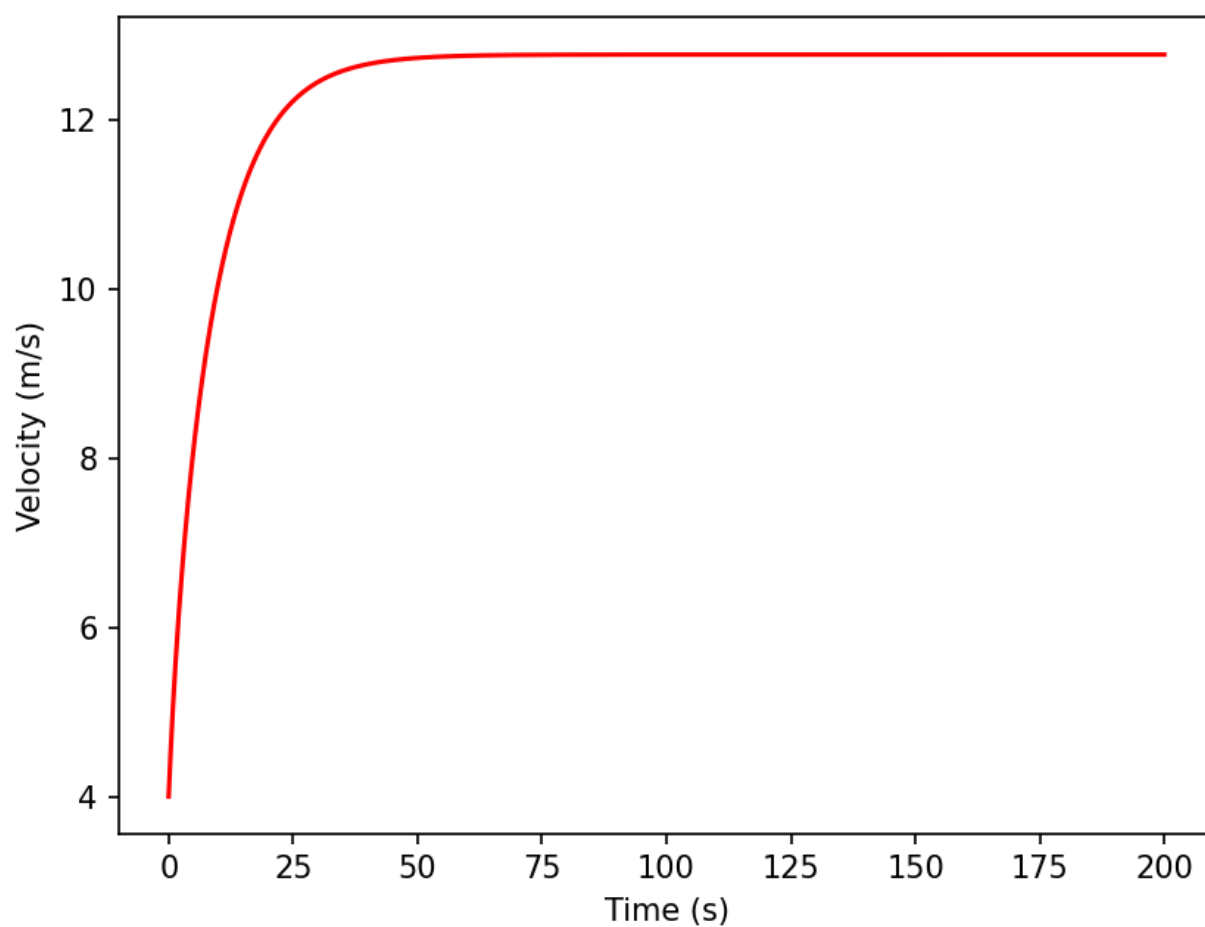

Figure 1: A graph of Velocity versus Time

as seen in 1 the velocity increases rapidly before plateauing at approximately 12.75 m/s

2 Adding the Stokes' Term

3 Modeling Random Walks

In this section, we will be using python to model random walks and plotting the results
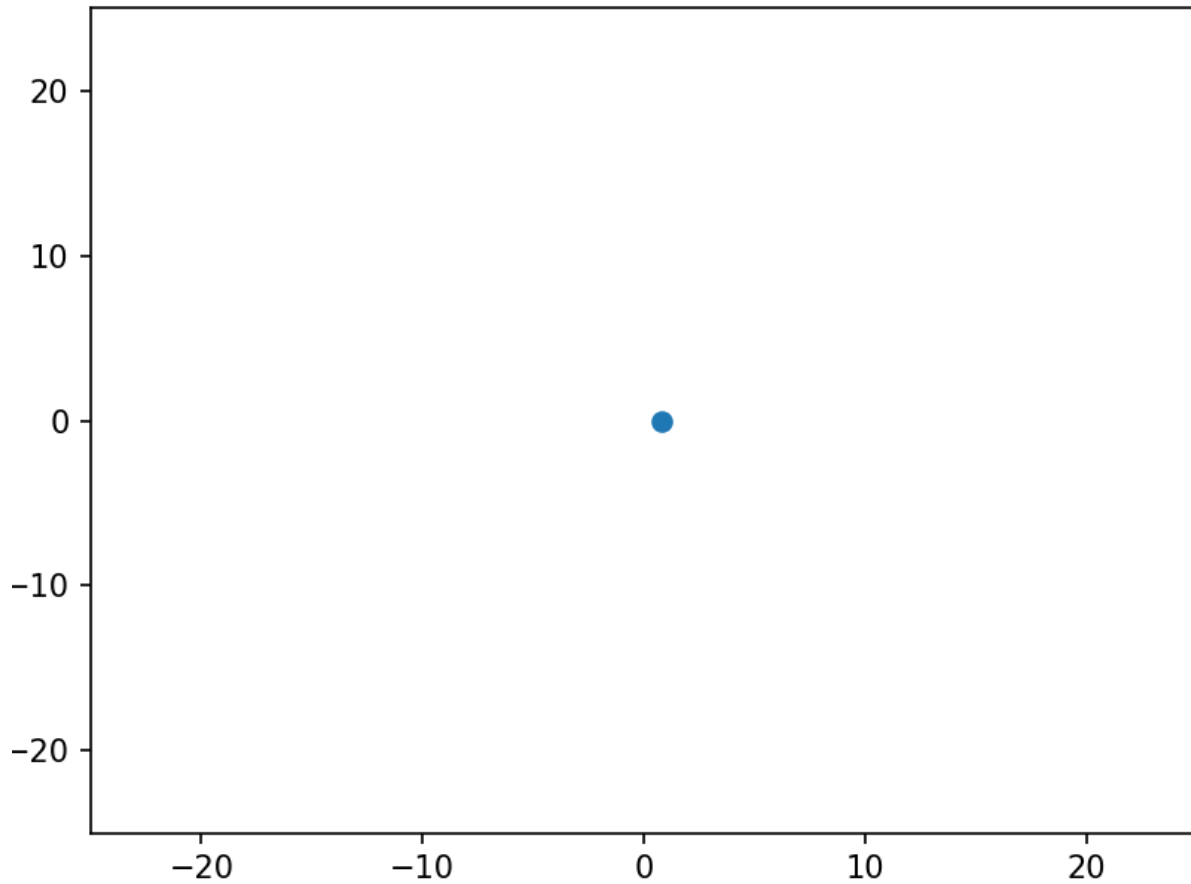
3.1 A single walker

Figure 2: A dot showing the position of a single random walk after 100 iterations along the x-axis

3.2 The means of a walk

As seen in 3, the values of the mean tend to be rather constant as well as hovering between the values of -1 and 1. The mean squared is slightly smaller than the mean, and will always be positive. I would, however, expect the values to be closer to zero. I think this comes from an error in my program adding a 1 to the values, but I cannot find where this would occur.
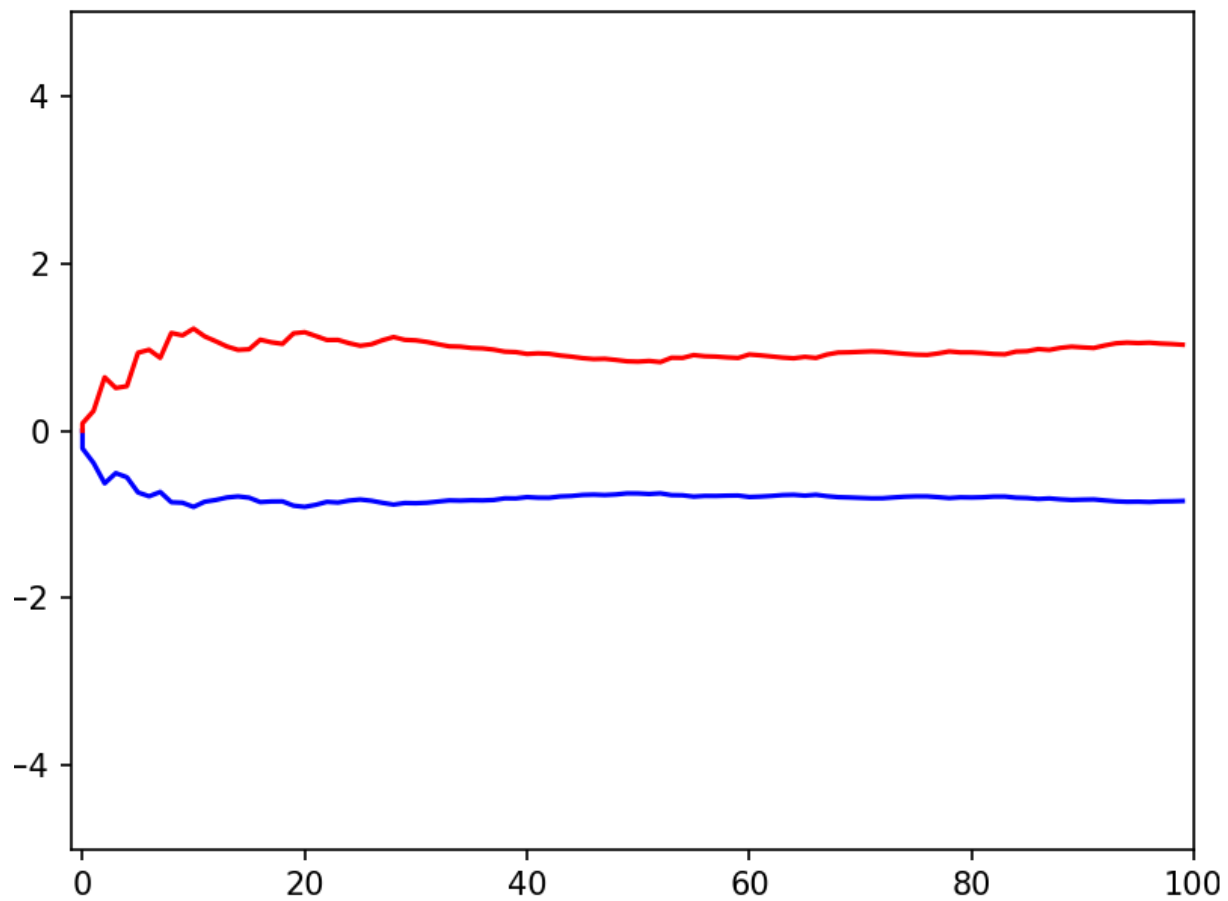
Figure 3: This plot shows the values of the mean and mean squared, pictured as the blue and red line respectively