

Modeling Shuttlecock Data

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Notebook to support Exercise 2.2.9, the fall of a shuttlecock with air resistance.

```
> restart;  
with(plots) :
```

The data, in time/distance pairs.

```
> data := [[0, 0], [0.347, 0.61], [0.47, 1.00], [0.519, 1.22], [0.582, 1.52], [0.65, 1.83], [0.674,  
2.00], [0.717, 2.13], [0.766, 2.44], [0.823, 2.74], [0.87, 3.00], [1.031, 4.00], [1.193,  
5.00], [1.354, 6.00], [1.501, 7.00], [1.726, 8.50], [1.873, 9.50]]
```

A plot

```
> plt1 := pointplot(data, color = red, symbol = solidcircle, symbolsize = 20, labels  
= ["Time (seconds)", "Distance (meters)"]) :  
pp := display(plt1);
```

Now use $g = 9.8$, take a guess at k ($k=1$ is a good start), plot $d(t)$ from part (b), and compare to the data.

```
>
```