

Modeling Shuttlecock Data

Kurt Bryan and SIMIODE

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

The data, in time/distance pairs:

```
In[1]:= 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:

```
In[2]:= plt1 =  
         ListPlot[data, AxesLabel → {"Time (seconds)", "Distance (meters)"}, PlotStyle → {Red}]
```

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.