How far does the cat go?

A team of scientists have been studying the sprinting ability of cats. They have used a "radar-gun" type of apparatus to measure the speed of a cat. They want to know how far the cat goes in four seconds. Below are their speed measurements. How far did the cat go?

time (s)	speed (m/s)
0	0.00
2	1.00
4	1.41

Now suppose that the scientists measured the cat's speed every second instead of every two seconds. The result is the following data:

time (s)	speed (m/s)
0	0.00
1	0.71
2	1.00
3	1.22
4	1.41

Based on this, how far do you think the cat went in the four seconds? How close do you think your answer is to the actual value?

Now suppose that we get an (almost) continuous read-out from the radar gun and that we plot the speed on a graph. First, let's see how we can use these graphs to visualize the estimates that we made on the previous page. We'll also see a convenient way to figure out how far off our estimates are.
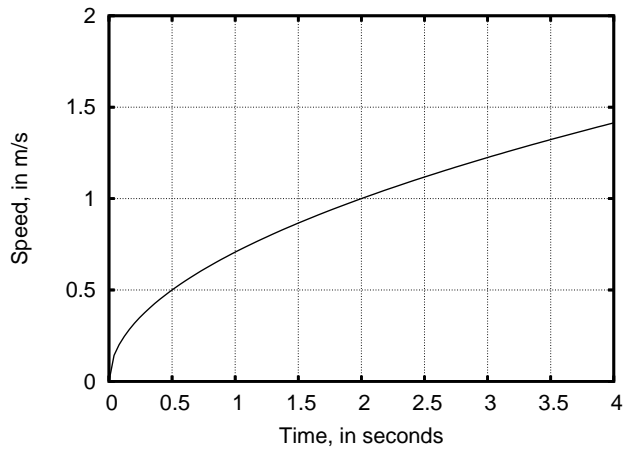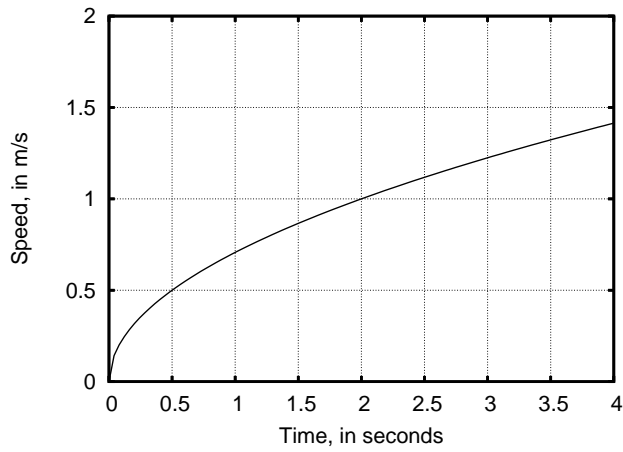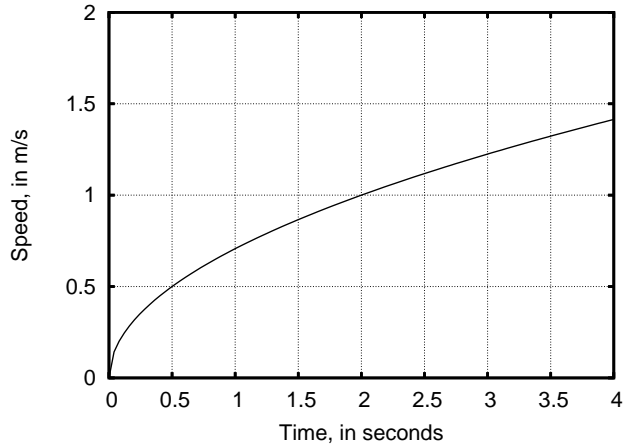
Now let's use the plot to think about how we can make our error smaller and smaller.