Lab 7: Motion

The Dot Machine

1. Make a motion diagram for something falling using the ticker timer.
2. Draw the velocity and acceleration arrows. Do this for around 10 dots. Choose a region of dots for which the acceleration appears close to constant.
3. Then make a plot of the position, velocity, and acceleration vs. time. Use a different set of axes for each plot.

Motion Worksheet

Do the worksheet on graphical descriptions of motion.

Measuring g

We will try to calculate g, the acceleration due to gravity, by measuring the time it take for an object to fall. To do so, time how long it takes for a quarter to fall exactly 1.5 meters. Practice using the stopwatch so you get a feel for how long it takes to start and stop it. See me or Cecily for details.

We will see in class tomorrow that for an object with a constant acceleration of a, it's position y will be given by

$$y = \frac{1}{2}gt^2 \, . \tag{1}$$

I.e., the above formula tell us how far the object will fall, if it accelerates for t seconds at a constant rate of a.

Name:

Trial	Falling time t
1	
2	
3	
4	
5	

Average your results to come up with your best estimate for the acceleration.

Name:

Trial	Falling time t
1	
2	
3	
4	
5	

Average your results to come up with your best estimate for the acceleration.