This simulation is still under construction, but we feel this version has value. We have done some student interviews and will addressing them for the next release. A "Reset All" feature and a way to indicate how much you have zoomed in or out are two major features that will be coming.

Non-obvious controls:

- The UNDO button will erase the last change (up to 50 changes); there is no REDO button.
- The ZOOM on each graph is independent of the others. Students may need some guidance to interpret. The activity ***Calculus Grapher for Math*** would be helpful.
- If you are doing a lecture demonstration, set your screen resolution to 1024x768 so the simulation will fill the screen and be seen easily.
- There is a zoom feature for all Flash simulations. Right click on the sim and select **Zoom in.** This can be helpful when you are using a projector or writing a lesson where you want a screen shot.
- The control box can be moved by clicking on the border and dragging.

Important modeling notes / simplifications:

- As you draw a curve, sections are changed not the entire line.
- If you want to draw a sine curve that is uses the entire length, press ZERO first.

Insights into student use / thinking:

- For this learning goal: *Describe in words with illustrations what the derivative and integral functions are*. Students should be able to explain that the derivative is the "rate of change" and the integral is the accumulation of the area of the function
- Students should draw the graphs vertically aligned as they are in the simulation to help construct the correct relationships between the graphs.

Suggestions for sim use:

- For tips on using PhET sims with your students see: **Guidelines for Inquiry Contributions** and **Using PhET Sims**
- The simulations have been used successfully with homework, lectures, in-class activities, or lab activities. Use them for introduction to concepts, learning new concepts, reinforcement of concepts, as visual aids for interactive demonstrations, or with in-class clicker questions. To read more, see **Teaching Physics using PhET Simulations**
- For activities and lesson plans written by the PhET team and other teachers, see: **Teacher Ideas & Activities**