Graphing Derivatives
Demonstration Activity

1) Open the Graphing Derivatives Demonstration located at
http://demonstrations.wolfram.com/GraphingDerivatives/

2) First get familiar with the various options. Choose a function. Adjust the slider for x_0 (if you click the box with a plus sign, you can press the play button to see the motion animated).

3) Choose the sin$x$ function. Sketch a graph of the derivative below.
What do you notice about what curve this looks like?

4) Choose the cos$x$ function. Sketch a graph of the derivative below.
What do you notice about what curve this looks like?

5) Choose the $-x^3 + x^2 + 12x - 2$ function. Sketch a graph of the derivative below.

6) What kind of tangent line occurs when the derivative graph hits the x-axis?

7) What is the slope of the tangent line when the derivative graph has an $x-$ intercept?

8) What are the slopes of the tangent lines when the derivative graph is above the $x-$ axis?

9) What are the slopes of the tangent lines when the derivative graph is below the $x-$ axis?

10) Based on what you have observed about tangent lines and their derivative graphs, sketch a graph of the derivative of the function below: