**Learning Goals:** Students will be able to:

* Given a function, sketch the derivative or integral curves
* Explain what the effect of a discontinuity in a function has on the derivative and the integral curves
* Explain the difference between smooth versus piecewise continuous function curve
* Be able to describe in words with illustrations what the derivative and integral functions demonstrate

**Directions:** For each question, use a colored pencil to draw what you think the derivative and integral curves will look like. Then use a different color to correct your sketches after testing your ideas using *Calculus Grapher*.

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**F(x)**

* Describe how using the **SHIFT** icon changes the derivative and integral curves.

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**F(x)**

1. .



* Describe how making the curve more steep like this changes the derivative & integral curves

**F(x)**

1. .

* How does repeating the same shape in different ways like taller, wider, repeated, or inverted change curves? Try many curves, but here’s some ideas:
* If you use the **SMOOTH** button, what changes? You can press SMOOTH more than once.

1. Look at each graph, describe if the graph and/or the derivative and integral graphs make sense and explain your reasoning.

**F(x)**

**F(x)**

**F(x)**

1. In your own words, what does the “Derivative of a function” mean?
2. In your own words, what does the “Integral of a function” mean?