



Examples 2.3 – Definition and Properties of the Derivative

1. Use the “ Δx ” version of the limit definition of the derivative at a point to find the slope of the curve $f(x) = 3x^2 - 1$ at $x = 2$. Then use the “ Δx ” version of the limit definition of the derivative function to find the slope formula.

Solution: The slope at $x = 2$:

The slope formula:

2. In Lesson 2.1, we used a “three-step method” to get $(ax^2 + bx + c)' = 2ax + b$. Derive this formula using the properties of derivatives.

Solution:

3. Use the method in Part 2 to find the derivative of $g(x) = 9x^2 - 14x + 7$.

Solution: