Chapter 2.3: The Derivative Function

Calculus I

College of the Atlantic. Winter 2021

In this problem we will calculate the derivative of $f(x) = 7x^2$ several ways:

1. Use different quotients and evaluate the limit to determine $f'(x)$.
2. Use your results for $f'(x)$ to calculate $f'(2)$.
3. Estimate $f'(2)$ numerically by evaluating difference quotients with your calculator.
4. Draw the tangent line at $x = 2$ and estimate its slope.
5. Which is larger, $f'(2)$ or the average rate of change of f from $x = 2.0$ to $x = 2.5$? Why?
6. Which is larger, $f'(2)$ or the average rate of change of f from $x = 1.5$ to $x = 2.0$? Why?