



Lesson 2.1 – Derivatives of Quadratic Functions

1.
 - (a) Carefully sketch the graph of $f(x) = (x - 3)^2$ in the interval $[0, 4]$ on the x -axis, and in the interval $[0, 9]$ on the y -axis. Then sketch the tangent line to the graph of f at $x = 1$.
 - (b) Estimate the slope of the tangent line using “rise-over-run.”
 - (c) Set up a table like Example 2.1.1. Use it to estimate the slope of the tangent line at $x = 1$.
 - (d) Expand $(x - 3)^2$ by multiplying $(x - 3)(x - 3)$.
 - (e) Use the formula for the derivative of a quadratic to find a formula for $f'(x)$.
 - (f) Use the formula from part (e) to find $f'(1)$. Were your estimates good ones?