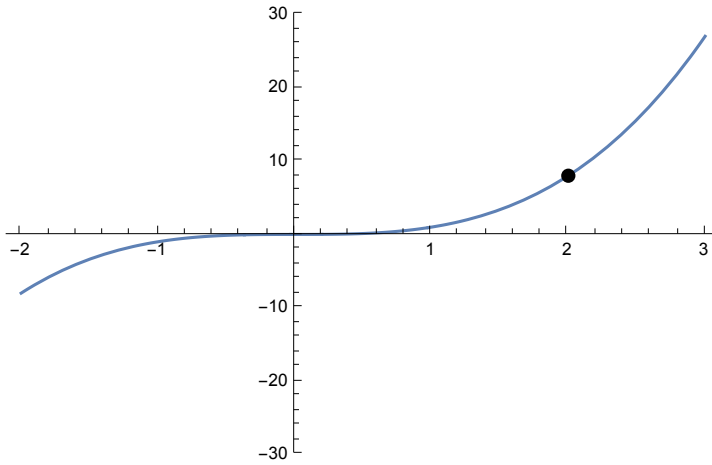


Functions and their Derivatives (I)

Example 1. $f(x) = x^3$



1. Give the formula we computed for the derivative of this function: $f'(x) =$ _____

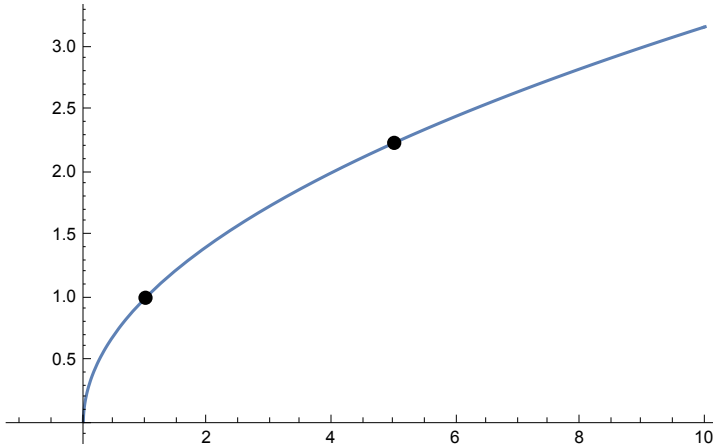
2. Give the coordinates of the point marked on the graph (the x-coordinate is 2): _____

3. What's the *slope* of the tangent line at the marked point? (Use the work we've already done!)

4. Give an *equation* for the tangent line to the graph at $x=2$.

Functions and their Derivatives (2)

Example 2. $f(x) = \sqrt{x}$



1. Give a formula for the derivative of this function (from the work we did in class).

2. Compute the exact slope of the secant line connecting the points on the graph at $x=1$ and $x=5$.
(Leave it in terms of square roots - no decimal approximations.)

3. Make a visual estimate (without any calculation): Which *tangent* line has the larger slope, the tangent line at $x=1$ or the tangent line at $x=5$?

- 3a. Compute the exact slope of the *tangent* line to the graph at $x=1$.
Note: You don't need to evaluate a limit for this problem. Use the work we've already done!

- b. And compute the exact slope of the tangent line to the graph at $x=5$.

- c. Write equations for both tangent lines (one for the tangent at $x=1$ and one for the tangent at $x=5$).