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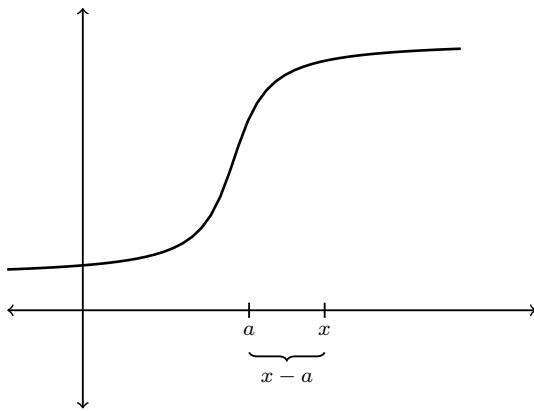
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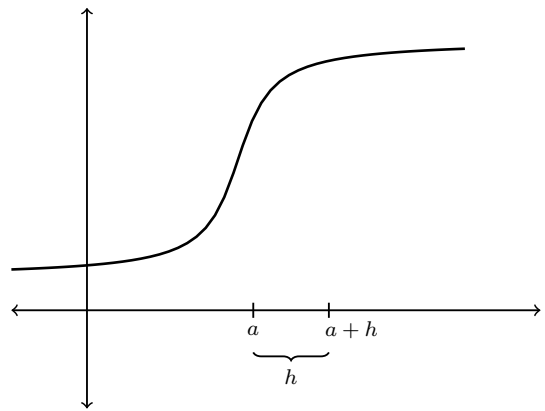
Worksheet 05

1. Suppose that the graph of $y = f(x)$ is given below. Let a be an arbitrary number.

- Label the points $(a, f(a))$ and $(x, f(x))$ on the graph on the **left**.
 - Draw the line through the points $(a, f(a))$ and $(x, f(x))$ on the graph on the **left**.
 - Write an equation for the slope of this line underneath it.
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- Label the points $(a, f(a))$ and $(a + h, f(a + h))$ on the graph on the **right**.
 - Draw the line through the points $(a, f(a))$ and $(a + h, f(a + h))$ on the graph on the **right**.
 - Write an equation for the slope of this line underneath it.



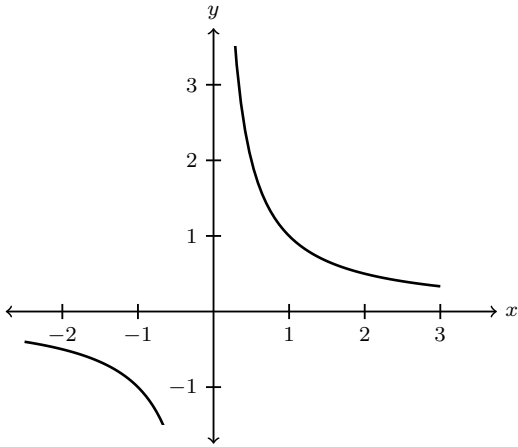
Slope =



Slope =

2. On **both** of the graphs above (in part 1), draw the tangent line to the curve $y = f(x)$ when $x = a$.

3. The graph of the curve $y = \frac{1}{x}$ is below. Draw the tangent line to the curve $y = \frac{1}{x}$ at the point $(2, \frac{1}{2})$, **and** find an equation for the tangent line to the curve $y = \frac{1}{x}$ at the point $(2, \frac{1}{2})$.



4. Suppose an object is dropped from a bridge, and its height in feet after t seconds is given by

$$s(t) = -16t^2 + 1600.$$

- (a) How tall is the bridge?
- (b) With what velocity will the ball hit the ground?