

Math 12
Vogler
Worksheet 2

NOTE: For the following problems, you are building secant lines (a line that joins two points on a given curve, which is indicated at the end of each problem). These secant lines are the foundation of the definition of the derivative, which you will learn in Calculus 1, and the algebraic manipulations done for these problem will help you compute derivatives in the future.

1.) Show that the slope of the line passing through the two points (x, x^3) and $(x+h, (x+h)^3)$ is $3x^2 + 3xh + h^2$. For this problem the given curve is $y = x^3$.

2.) Show that the slope of the line passing through the two points $(x, \sqrt{x})$ and $(x+h, \sqrt{x+h})$ is

$$\frac{1}{\sqrt{x+h} + \sqrt{x}}.$$

For this problem the given curve is $y = \sqrt{x}$.

3.) Show that the slope of the line passing through the two points $(x, \frac{1}{x})$ and $(x+h, \frac{1}{x+h})$ is

$$\frac{-1}{x(x+h)}.$$

For this problem the given curve is $y = \frac{1}{x}$.