



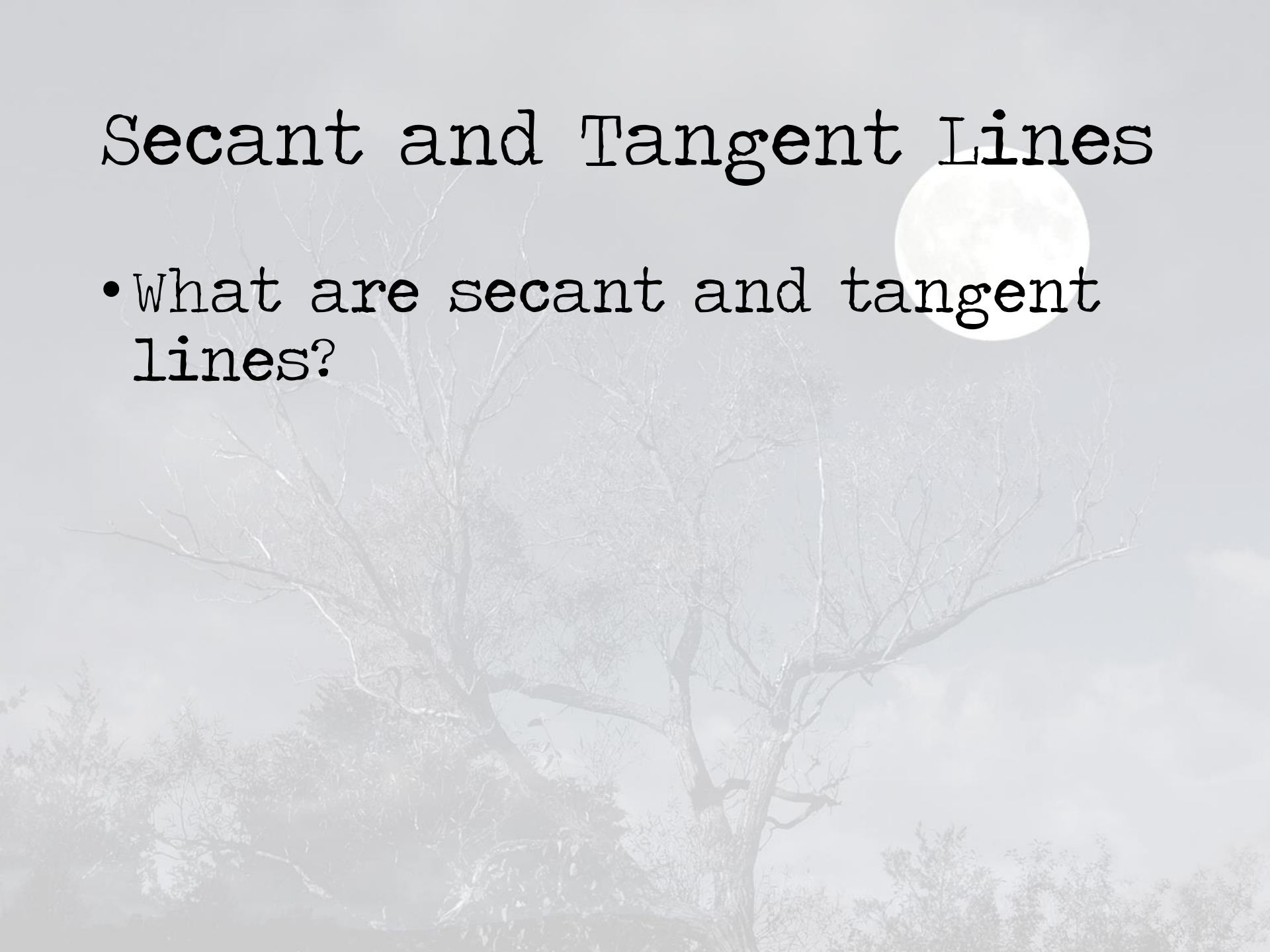
Slopes of Secant and Tangent Lines

Slopes of Secant and Tangent Lines

- Determine slopes and write equations of secant lines for given functions.
- Make basic observations about tangent lines on graphs.
- Language Objectives:
 - Distinguish between secant lines and tangent lines.

Secant and Tangent Lines

- What are secant and tangent lines?



Equations we will use

- $m = \frac{y_2 - y_1}{x_2 - x_1}$

- $m = \frac{f(x + \Delta x) - f(x)}{\Delta x}$ or $m = \frac{f(x + h) - f(x)}{h}$

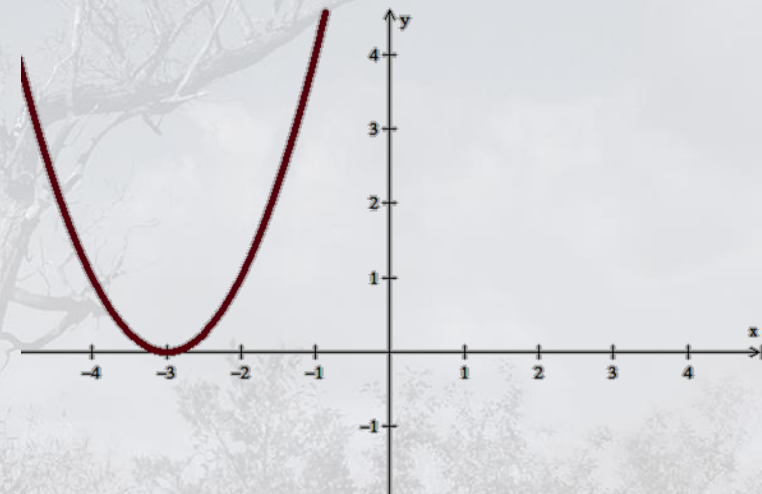
- $y = m(x - x_1) + y_1$ or $y = mx + b$

Sketching Lines

- Sketch $y = (x + 3)^2$
- Sketch the secant line that connects the points $x = -1$ and $x = -3$

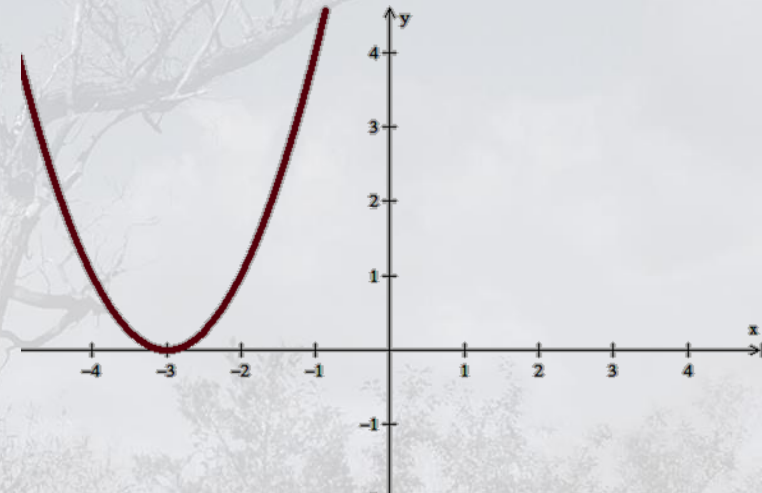
Sketching Lines

- Sketch $y = (x + 3)^2$
- Sketch the secant line that connects the points $x = -1$ and $x = -3$



Sketching Lines

- Sketch $y = (x + 3)^2$
- Find the slope of the secant line that connects the points $x = -1$ and $x = -3$

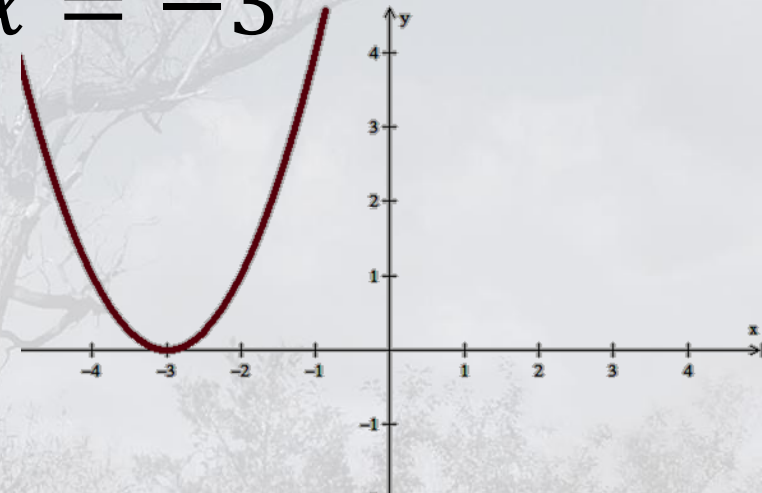


Equations of Tangent Lines

- To find the slope of a tangent line...
- $y = m(x - x_1) + y_1$
- It doesn't matter which point you pick, as long as x_1 and y_1 correspond.
- To get m , use the equation: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Sketching Lines

- Sketch $y = (x + 3)^2$
- Write the equation of the secant line that connects the points $x = -1$ and $x = -3$



Tangent Lines

- What is a tangent line?
- How does it differ from a secant line?

Sketching Lines

- Sketch $y = (x + 3)^2$
- Sketch the tangent lines that contain the points $x = -1$, $x = -3$, and $x = -4$

