

General Comments. Each animation must include a legend, axis labels, a title, and a caption. Leave the title of the graph as the value of the animation parameter. The caption must include a display of important values that change other than the animation parameter, a brief summary of patterns and mathematical concepts that the animation is illustrating, and your name (... Created by John Doe). After completing a successful animation, export the animation as a *.gif file.

Submit the assignment with both the Maple file and the *.gif files. If the file sizes are too large to submit by email, bring your jump drive to load it onto your instructors computer.

Information for creating the animations for this activity may be found in sections 5.5, 5.6, and 5.7 in the Maple User Manual.

1. Create an animation of the graph of the linear equation $y = mx + b$ with b a fixed constant equal to the number of letters in your last name. Let the slope be the animation parameter and let it vary from -3 to 3 .
2. Choose and complete two of the animations listed below.
 - (a) Create an animation of the graph demonstrating that a tangent line is the limit of secant lines for g at the given value. The graph should show the function and the two secant lines (one on each side). The caption should include the slope of each secant line. *Caution:* Do not allow $h = 0$ in the secant lines. *Optional:* Show the points of intersection of the secant lines with the graph of the function.

$$g(x) = x^3 \text{ at } x = 1$$

- (b) Create an animation illustrating the change in the value of the derivative of P as a point is moved along the graph of P over the given interval by sliding a tangent line along the curve. The caption should include the slope of the tangent line. *Optional:* Show the point of tangency.

$$P(x) = x^4 - 4x^3 + x^2 + 6x \text{ on } [-1.5, 3.5]$$

- (c) Create an animation of the graph demonstrating the given limit. Make sure both sides of the two-sided limit are illustrated. The display should show points moving on the curve and segments drawn to the axis illustrating the neighborhoods of the limit definition. The caption should give both coordinates of the moving points.

$$\lim_{x \rightarrow 2} 4 \cos x$$