

1. Use Fermat's Method to compute the derivative of $y = mx + b$ where m and b are any real numbers. Explain your result.

2.
 - a. Use Fermat's Method to compute the derivative of $y = (x-1)^2$. Hint: To compute $(x+h-1)^2$, think of $h-1$ as "one number," then multiply in stages. The first stage is: $(x+[h-1])^2 = x^2 + 2x(h-1) + (h-1)^2$.
 - b. Sketch $y = (x-1)^2$ and $y = x^2$ together on the same grid.
 - c. Sketch the tangent line at $x = 2$ for $y = x^2$ and determine the equation for the line.
 - d. For which value of x is the tangent line for $y = (x-1)^2$ parallel to the tangent line at $x = 2$ for $y = x^2$? Give the point, sketch the line and determine the equation for the line. Label clearly.

3.
 - a. Use Fermat's Method to compute the derivative of $y = -(x-1)^2$.
 - b. Sketch $y = -(x-1)^2$ and $y = (x-1)^2$ together on the same grid.
 - c. Sketch the tangent line at $x = 2$ for $y = (x-1)^2$ and the tangent line at $x = 2$ for $y = -(x-1)^2$ and determine the equation for each line. Label clearly.
 - d. How does the derivative of $y = -(x-1)^2$ compare to derivative of $y = (x-1)^2$? How can you see this in your graphs? Explain.