1. Suppose the line described by $y = 5x - 9$ is tangent to the graph of $y = f(x)$ at $x = 4$.
   (a) Calculate $f(4)$. If there is not enough information to do so, explain why.
   (b) Calculate $f(3)$. If there is not enough information to do so, explain why.
   (c) Calculate $f'(4)$. If there is not enough information to do so, explain why.
   (d) Calculate $f'(3)$. If there is not enough information to do so, explain why.

2. Use the limit definition of the derivative to calculate the derivative of $f$ at $x = 5$. Then find an equation for the line tangent to the graph of $y = f(x)$ at $x = 5$.
   (a) $f(x) = 2x - 1$
   (b) $f(x) = (2x - 1)^2$
   (c) $f(x) = \sqrt{2x - 1}$
   (d) $f(x) = \frac{1}{2x - 1}$
   (e) $f(x) = \frac{1}{\sqrt{2x - 1}}$
   (f) $f(x) = \frac{1}{\sqrt{2x - 1}}$

3. The graph of $y = f(x)$ is given below. Sketch a graph of $y = f'(x)$. Only the general shape is important. Do not worry about scales.

4. Consider the following function.
   $$f(x) = \begin{cases} 
   -x^2, & x < 0 \\
   x^2 + 2x, & 0 \leq x < 1 \\
   6x - x^2 + c, & x \geq 1
   \end{cases}$$
   (a) Is $f$ differentiable at $x = 0$?
   (b) Is there a value of $c$ that makes $f$ differentiable at $x = 1$? If so, calculate it. If not, explain why.