3. (10 points) Suppose $f'(x)$ is a differentiable increasing function for all x. In each of the following pairs, circle the larger value. In each case, give a **brief** reason for your choice. (Assume that none of the values below are equal for this function and $\Delta x \neq 0$).

   (a) $f'(5)$ and $f'(6)$

   (b) $f''(5)$ and 0

   (c) $f(5+\Delta x)$ and $f(5)+f'(5)\Delta x$

4. (15 points) Using calculus, find constants a and b in the function $f(x) = axe^{bx}$ such that $f(\frac{1}{3}) = 1$ and the function has a local maximum at $x = \frac{1}{3}$. Once you have found a and b, verify that your answer satisfies the given conditions. Show all work.