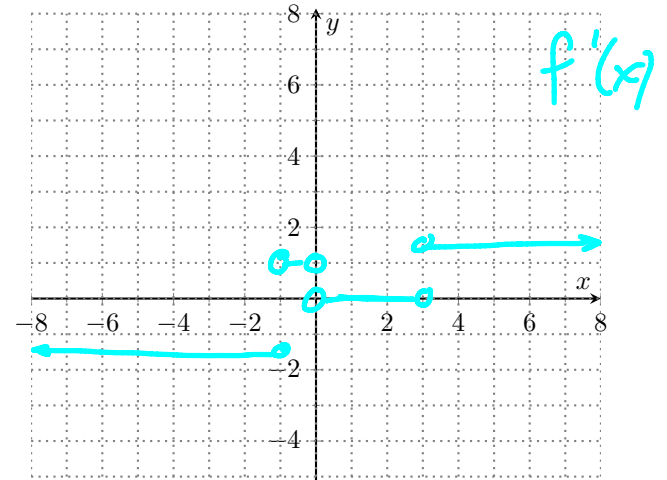
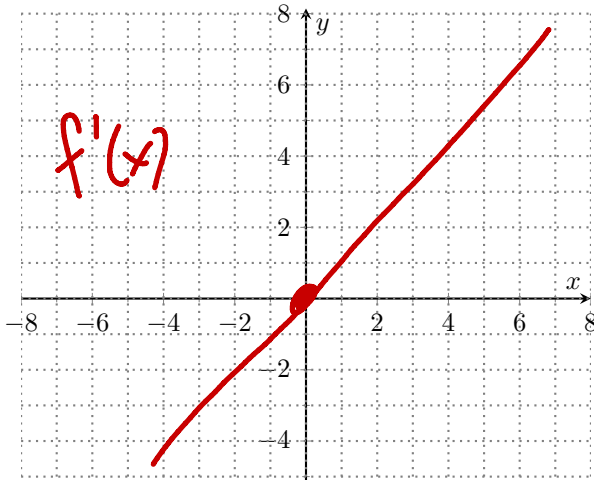
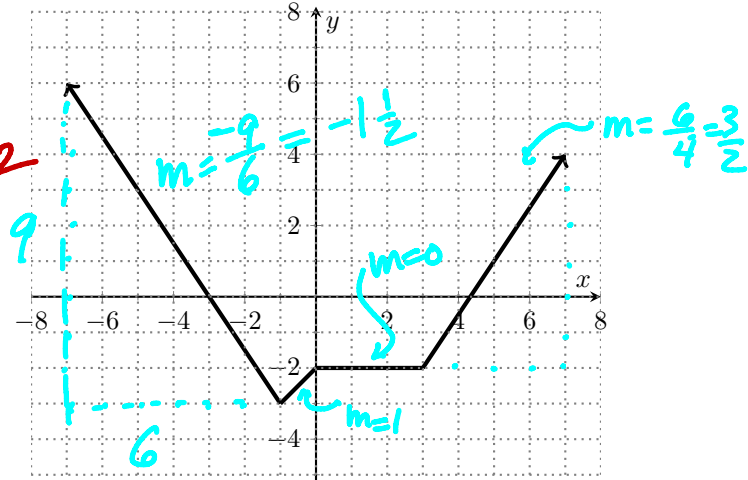
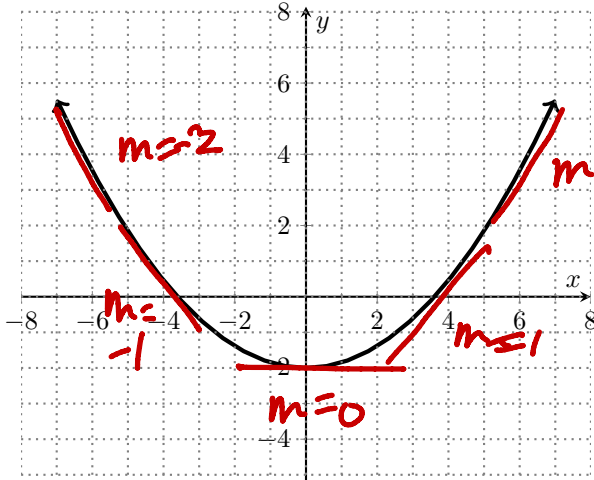


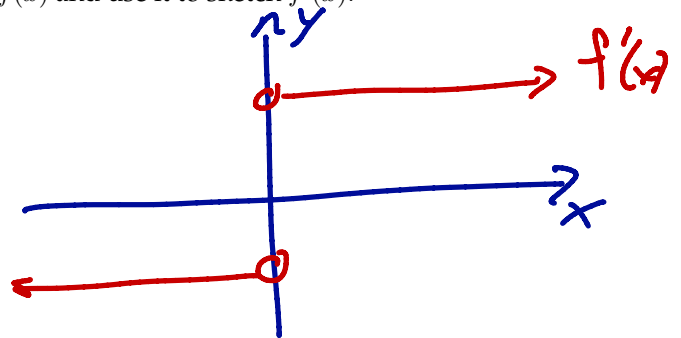
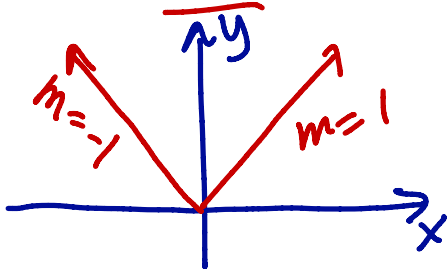
SECTION 2-8

1. For each problem below, you are given the graph of $f(x)$. You must sketch the graph of $f'(x)$ on the axes below.

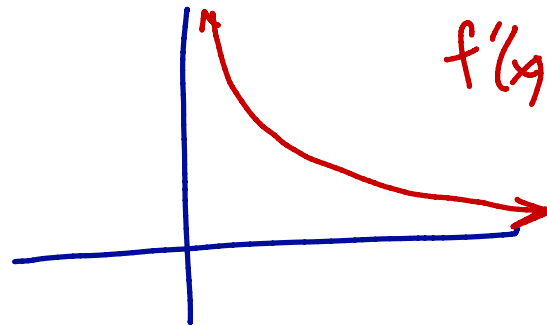
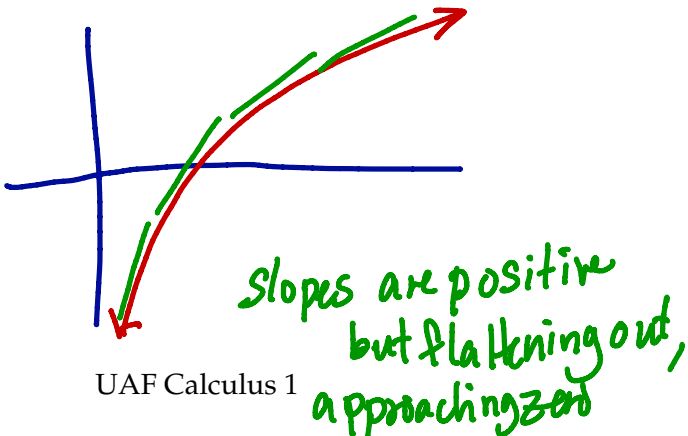


2. For each problem below, make your own sketch of $f(x)$ and use it to sketch $f'(x)$.

(a) $f(x) = |x|$

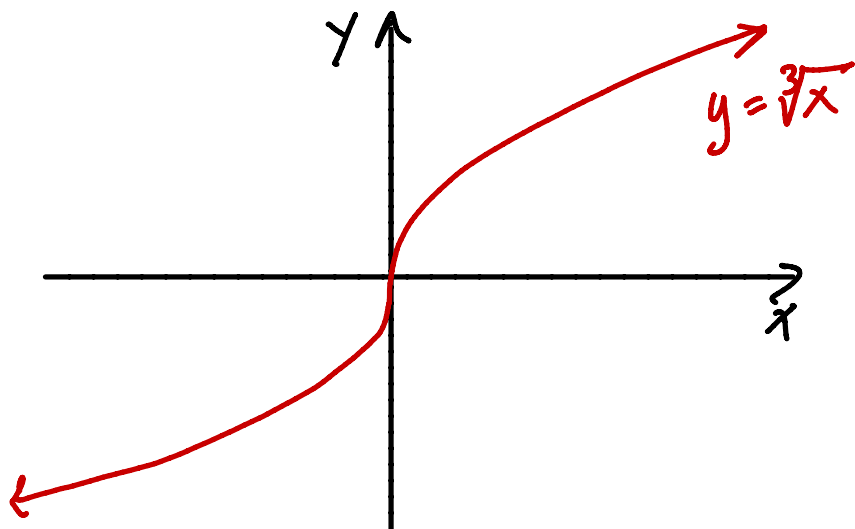


(b) $f(x) = \ln x$



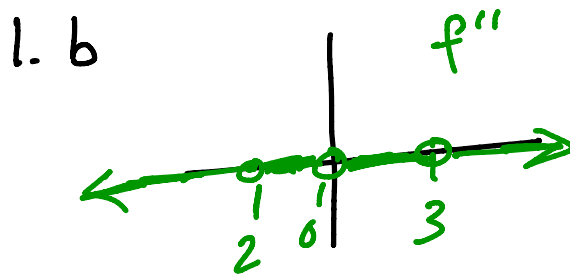
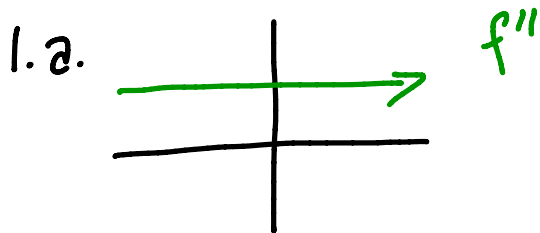
3. The derivative of $f(x) = x^{1/3}$ is $f'(x) = \frac{1}{3x^{2/3}}$. Explain why f does not have a derivative at $x = 0$ but it does have a tangent line at $x = 0$.

$f'(0) = \frac{1}{3 \cdot 0^{2/3}}$, which is undefined.

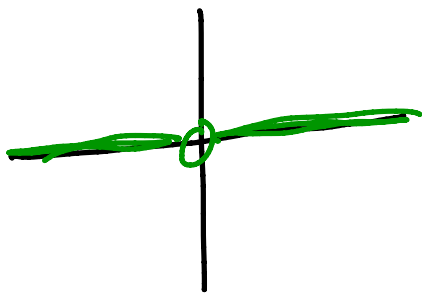


The y -axis is tangent to $y = \sqrt[3]{x}$ at $x=0$. But, because it's vertical, its slope is undefined.

4. For the functions in parts 1 and 2, draw $f''(x)$, the derivative of the derivative (or the second derivative).



2a. f'' of $y = |x|$



2b. $f''(x)$ for $f(x) = \ln x$.

