Main Exercises Week 8

MATH 130: Calculus I, Section 4 Your Name (Print): _____

Follow the general guidelines for the Main Exercises assignments (the salmon colored handout). Be sure to **staple** together your pages if you have more than one, and include your **name** at the top. Neatness is appreciated, makes a good first impression, and can earn you a bonus point!!!

Due: at the beginning of class on Friday, March 10th

Remember: Your write-up should be **your own**. You may discuss these problems with others, but **you should be alone when you write them up**, using only outlines of any group or Intern discussions. EXPLAIN and SHOW YOUR WORK!!! Final answers will not receive full credit without supportive explanations.

1. Let $f(x) = x^3 + \frac{15}{2}x^2 - 72x$.

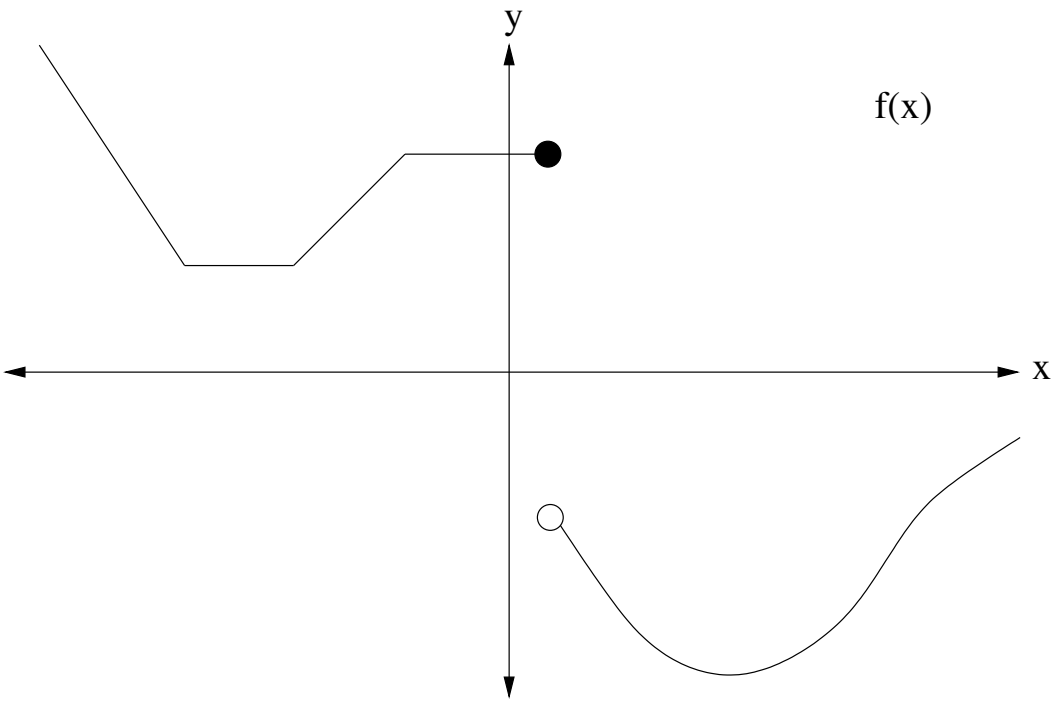
   Find the values of x at which the tangent line to f has slope 36. Write a complete sentence explaining your thought process. Be sure to show all your work clearly.

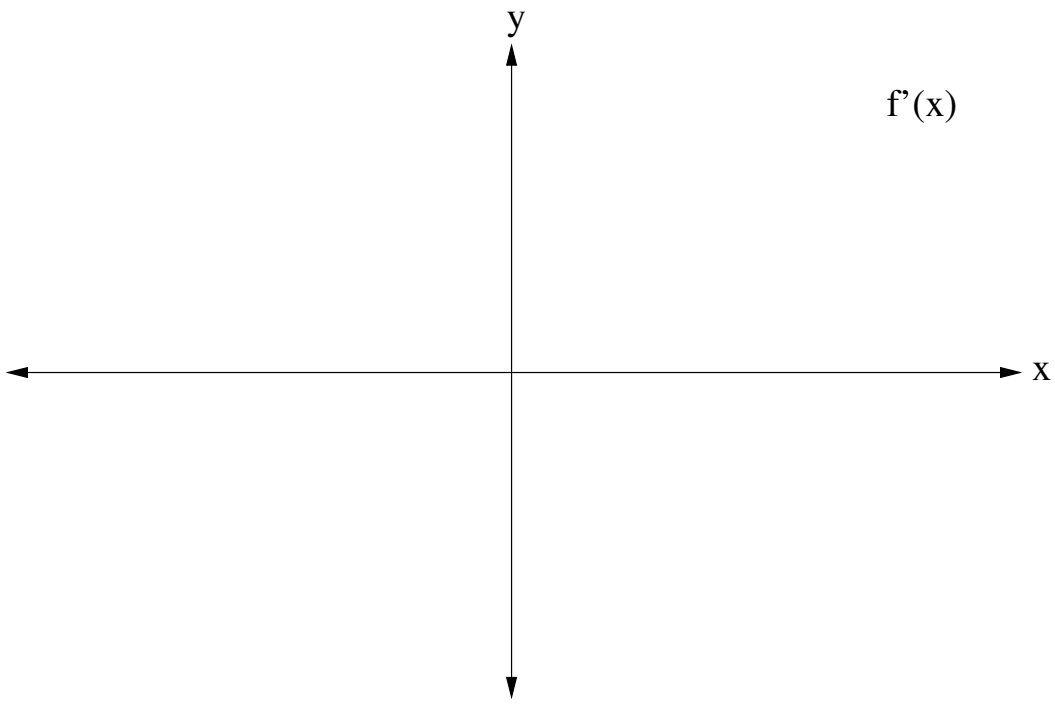
2. Find the derivatives of the following functions. Simplify your answers by eliminating negative exponents and gathering like terms.

   (a) $f(x) = \dfrac{e^x \tan x}{5x^4 + 7x^2 - 9}$

   (b) $y = \sin(\sqrt[3]{x}) + \sqrt[3]{\sin x}$

3. Given the graph of $y = f(x)$ on the next page, sketch the graph of $f'(x)$ on the given axes.


y
f(x)
x


y
f'(x)
x