Main Exercises Week 12

MATH 130: Calculus I, Section 2 & 3 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!!!

Note: Although I usually allow you to do these on your own paper, this time I would ask that you submit on the hand out because of the graphs on page 2.

Due: at the beginning of class on Friday, April 13th (Happy Friday the 13th!)

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. You may use your own paper on which to write these up.

1. Let $f(x) = 6x^{1/3} - 2x$.

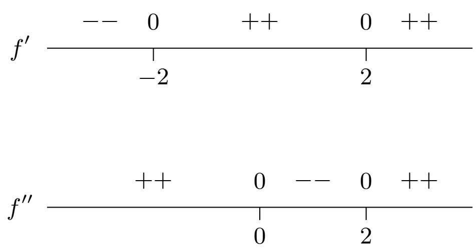
   (a) Find the critical points of f and determine which critical points are local maxima, minima, and which are not extreme.

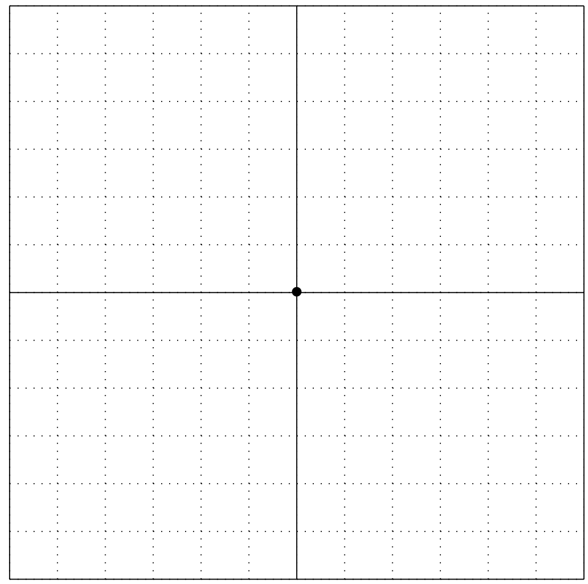
   (b) Determine which points are inflection points and find the intervals of concavity for f.

2. Below I give you information about the derivatives of two *continuous* functions. **Make note of the following information on the given charts below before you graph the function.** First determine where each function is increasing and decreasing. Next classify each critical point as a relative max, relative min, or neither. Then determine where the function is concave up and down and the location of any inflections.

Then for each, sketch the graph function that would have derivatives like those given. Indicate on your graph which points are local extrema. DNE indicates that the derivative does not exist at the point (though the original function does). You will need to make up function values for the critical points that are consistent with the given information. The only point you know in each case is that the function passes through $(0,0)$, which is marked on each graph.

(a)





(b)