Math 29
Homework 16

Write a 1-3 sentence summary of what we did in class the previous period.

1. Use information about the derivative and second derivative to sketch a graph of the function $f(x) = \frac{1}{x(x-1)}$.

2. Assume that $f(x)$ is a function which is differentiable everywhere and has just one critical point at $x = 3$. In parts a–c you are given additional conditions. In each part decide whether $x = 3$ is a local maximum, a local minimum, or neither. Also sketch a graph for each part.

   (a) $f'(1) = 3$ and $f'(5) = -1$

   (b) $f'(2) = -1$, $f(3) = 1$

   (c) $f(1) = 1$, $f(2) = 2$, $f(4) = 4$, $f(5) = 5$

3. Consider the function $f(x) = 6x^{\frac{1}{3}} + \frac{3}{2}x^{\frac{4}{3}}$. Use derivatives to find the x-coordinates of all maxima, minima, and inflection points. Draw a sketch of the graph of $f(x)$ based on the information that you found. You do not have to find the intercepts of your function or the y-coordinates of you maxima, minima, or inflection points.

In Section 8.12, do problems 5, 6, 7, 12, 14, 15. Be sure to show all of the steps of your work.