Math 2A Worksheet: 4.3 Derivative Tests

Write your names and Student ID numbers at the top of the page

1. Given $f(x) = 2x^3 - 9x^2 + 12x - 3$ find,
   (a) the intervals on which the function is increasing and decreasing,
   (b) the local maximum and local minimum values, and
   (c) the intervals of concavity and any inflection points.

2. Find the local extreme points and values functions using the first derivative test and again using the second derivative test.
   $f(x) = \dfrac{x^2}{x-1}$

3. Sketch the graph of (a) a function whose first derivative is positive and whose second derivative is negative for all x and (b) a function whose first derivative is negative and whose second derivative is positive for all x.

4. In an episode of The Simpsons, Homer reads from a newspaper and announces "Here's good news! According to this eye-catching article, SAT scores are declining at a slower rate." Interpret Homer's statement in terms of a function and its first and second derivatives.