MAT 161   Names:_____

1.   Use the power rule to find $f'(3)$ for the following:

   a) $f(x) = x^2 - 4x + 1$

   b) $f(x) = \dfrac{1}{x-1}$

   c) $f(x) = \sqrt{x+4}$

2. Find the derivatives of each function below. Check the reasonableness of your answer by graphing $f(x)$ and $f'(x)$ on the same axes: (Note: These must be re-written in order to use the power rule.)

   a) $f(x) = \dfrac{3x-1}{x}$

   b) $f(x) = \dfrac{2\sqrt{x}-3}{x}$

3. Write an equation of the tangent line to the graph of $f(x) = x^3 - 6x^2 + 2$ at its point of inflection.

4. Find the second derivative of $f(x) = 2\sqrt{x} - \dfrac{3}{x^2}$. Check the reasonableness of your answer by graphing $f(x)$ and $f''(x)$ on the same axes.