MTH 1125 (11 am) Test #3

Fall 2019

Pat Rossi Name _____

Instructions. Show CLEARLY how you arrive at your answers.

1. $f(x) = x^3 - 3x - 5$ Determine the intervals on which $f(x)$ is increasing/decreasing and identify all relative maximums and minimums.

2. $f(x) = x^4 + 2x^3 - 12x^2 - 6x + 3$ Determine the intervals on which $f(x)$ is Concave up/Concave down and identify all points of inflection.

3. $f(x) = 2x^3 - 9x^2 - 24x + 2$ on the interval $[-2, 2]$. Find the Absolute Maximum and Absolute Minimum values (if they exist).

4. $f(x) = \frac{2}{7}x^{\frac{14}{5}} - x^{\frac{4}{5}}$ Determine the intervals on which $f(x)$ is increasing/decreasing and identify all relative maximums and minimums.

5. A rectangle is inscribed in the region bounded by the positive x-axis, the positive y-axis, and the graph of $f(x) = (x-6)^2$ as shown below. Determine the value of x that makes the area of the rectangle as large as possible.