

**MTH 1125 (9 am) Test #3**

FALL 2017

Pat Rossi

Name \_\_\_\_\_

**Show CLEARLY** how you arrive at your answers.

1. Given that  $y^3 + x^3 = x^3y^3$ ; compute  $y'$

2.  $f(x) = x^3 - 3x^2 - 24x + 2$ . <sup>1</sup>Identify the intervals on which  $f(x)$  is increasing/decreasing, and <sup>2</sup>identify all relative maximums and minimums.

3.  $f(x) = 4x^{\frac{5}{3}} - 10x^{\frac{2}{3}} + 1$ . <sup>1</sup>Identify the intervals on which  $f(x)$  is increasing/decreasing, and <sup>2</sup>identify all relative maximums and minimums.

4.  $f(x) = 4x^3 - 3x^2 - 6x + 2$  on the interval  $[0, 2]$ . Find the absolute maximum value and absolute minimum value of  $f(x)$ .

5. Farmer Joe has 100 feet of wire fence. He will use it to construct a rectangular pen. If the side of a barn will form one side of the pen, what should the dimensions of the pen be in order for the pen to enclose as large an area as possible? (No fence will be used on the side of the pen that borders the barn.)

