

Name: \_\_\_\_\_

Math 151 Calculus I – Crawford

Take-Home Quiz 4

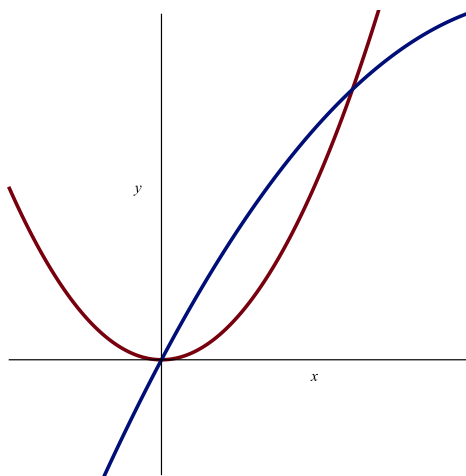
Due: Thursday, December 5 (in-class)

Books, notes, and calculators *are* allowed. But you must show all of your work for full credit. You *are* allowed to work with each other and to get help from the tutors, but you cannot get help from me. ***You must show all your work.*** You may turn this quiz in by 3:00pm on Thursday, December 5, 2019 without penalty. It will **not** be accepted after that.

1. (4 pts) Evaluate the following integral:  $\int_0^2 t^2 \sqrt{1+t^3} dt$  [Simplify your answer.]

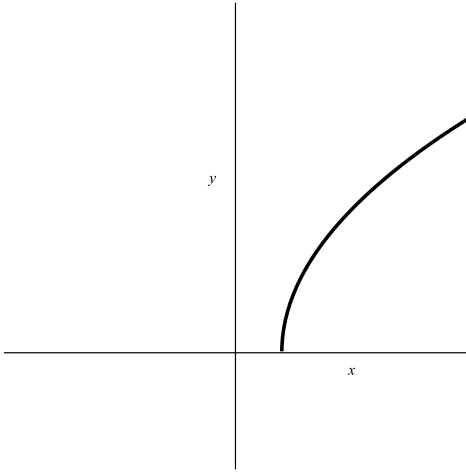
2. (3 pts) Given the graphs of  $y = 3x^2$  and  $y = 8x - x^2$  below,

- (a). Label each curve with the correct function and shade the area between the two curves.
- (b). Set up, **but do not evaluate**, the integral(s) to find the **AREA** between the two curves. [Include bounds. You must show the work for finding the bounds.]



3. (4 pts) The graph of the top half of  $x = 1 + y^2$  is given below.

- (a). Shade the region bounded by  $x = 1 + y^2$ ,  $x = 0$ ,  $y = 0$ , and  $y = 2$ .
- (b). Set up, **but do not evaluate**, the integral(s) to find the **VOLUME** of the solid generated by rotating the shaded region about the  $y$ -axis. [Include bounds.]



4. (4 pts) The graphs of  $y = 3x^4$  (thin curve) and  $y = 9x^2 - x^4$  (thick curve) are given below. Set up, **but do not evaluate**, the integral(s) to find the **VOLUME** of the solid generated by rotating the shaded region about the line  $y = 25$ . [Include bounds. You must show work for finding the bounds.]

