

**Math 148 Quiz #5**  
**July 27, 2010**

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

Show all work and answers on a separate sheet with a box around your final answer. Calculators are permitted.

1. Suppose you sell widgets for \$500 each. The cost for producing widgets is  $C(q) = \frac{1}{3}q^3 - 35q^2 + 1300q + 200$ .
- (a) (2 pts.) Find the marginal cost of producing  $q$  items.
  - (b) (3 pts.) Should you increase production (produce more items) if you have already produced 30 items? What if you have already produced 60 items?
  - (c) (4 pts.) How many widgets should you sell to **maximize** profit? (Round to the nearest widget.)
  - (d) (2 pts.) Find the average cost of producing 30 items.
2. Evaluate the following. (Simplify constants where possible.)

(a) (3 pts.)  $\int 2z^3 - z^{1/3} + 5 \, dz$

(c) (3 pts.)  $\int 8t^3(t^4 + 5)^6 \, dt$

(b) (3 pts.)  $\int x \cdot e^{5x^2} \, dx$