

Math 111 B - Autumn 2011
Mid-Term Exam Number One
October 27, 2011

Name: _____

Section: _____

HONOR STATEMENT

"I affirm that my work upholds the highest standards of honesty and academic integrity at the University of Washington, and that I have neither given nor received any unauthorized assistance on this exam."

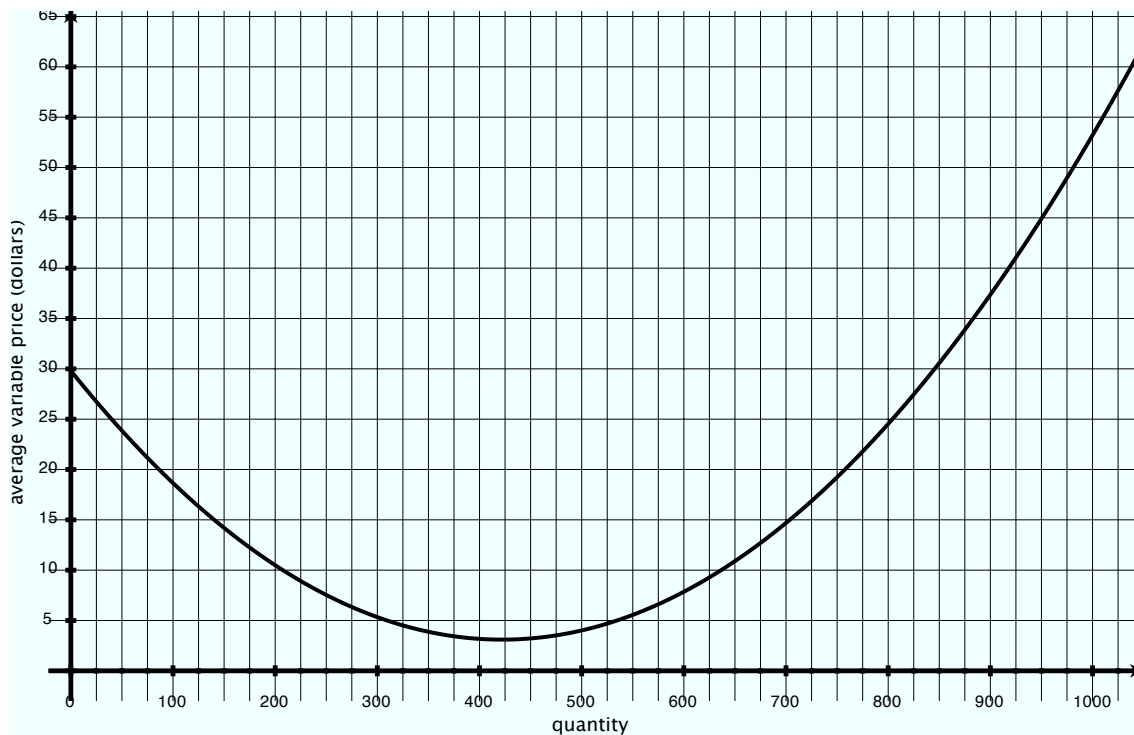
Signature: _____

1	15	
2	20	
3	20	
4	15	
Total	70	

- Complete all questions.
- You may use a calculator during this examination. Other electronic devices are not allowed.
- Turn your cell phone off and put it away for the duration of the exam.
- You may use one, hand-written, double-sided, 8.5 by 11 inch page of notes.
- Show all work for full credit.
- You have 50 minutes to complete the exam.
- Put your name on your sheet of notes and turn it in with the exam.

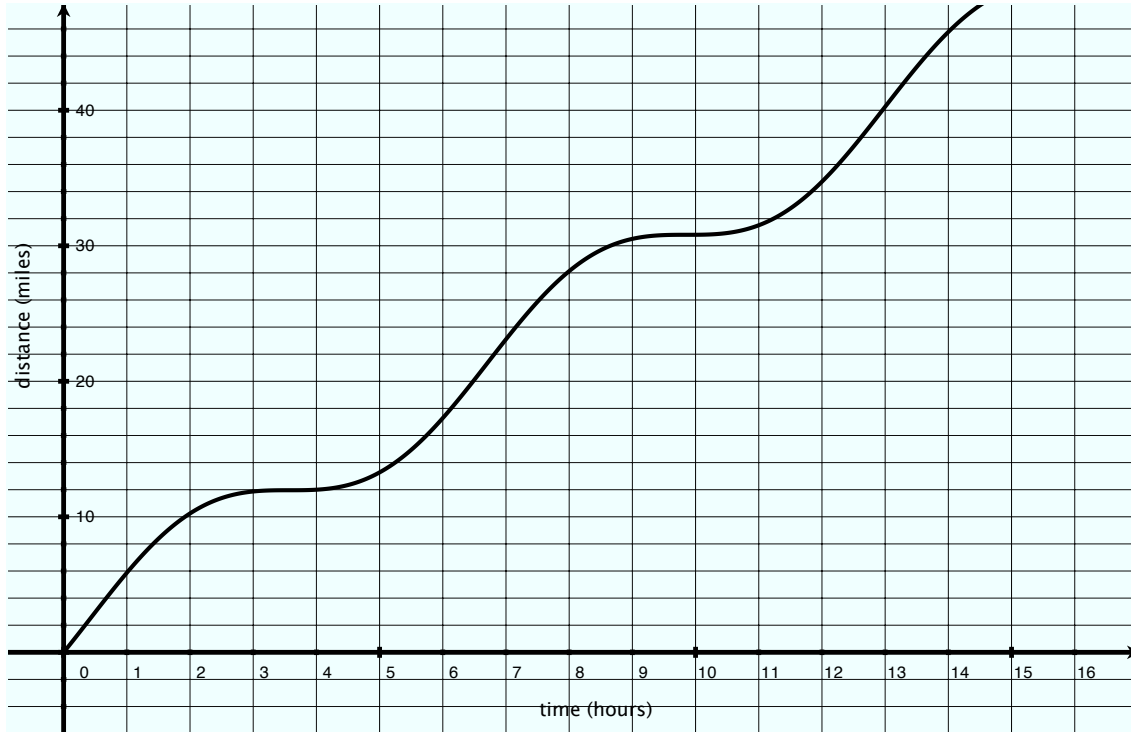
GOOD LUCK!!

1. You make and sell Products. Your average variable cost (AVC) is graphed versus quantity in the figure below. Your fixed cost (FC) is \$8300.



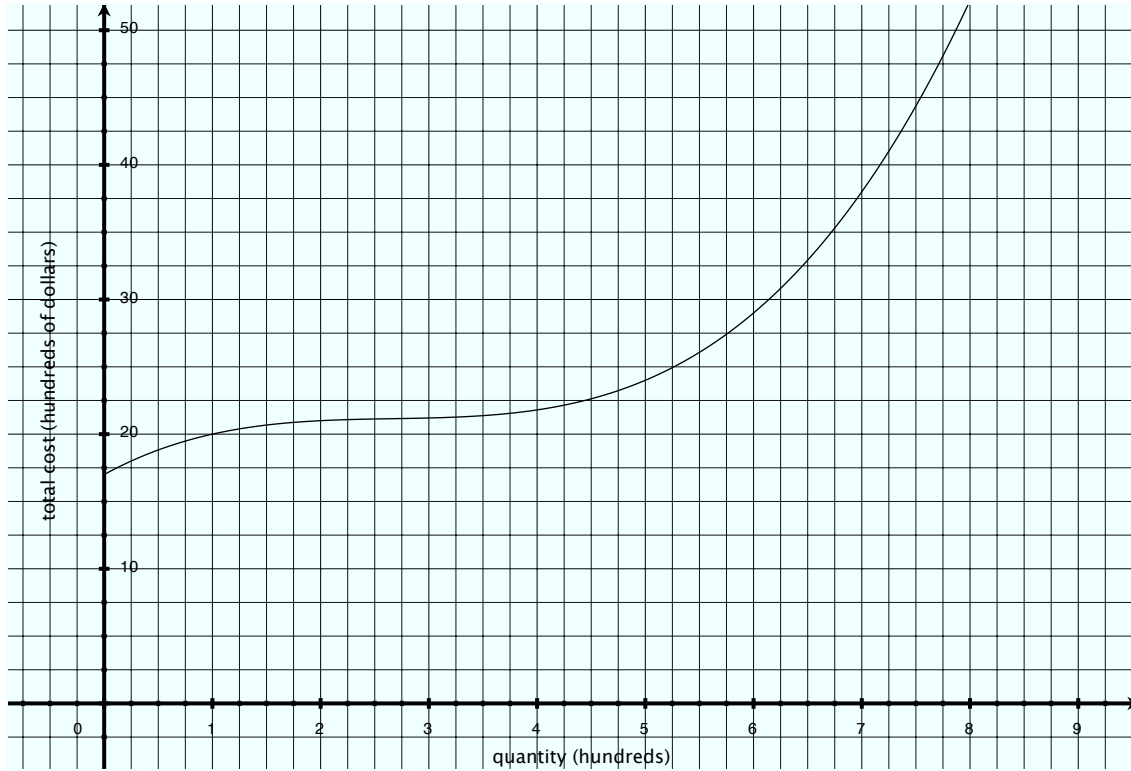
- (a) Determine the increase in your total cost (TC) if the quantity is increased from $q = 550$ to $q = 900$.
- (b) If the market price for a Product is \$80, what is your profit for a quantity of $q = 620$?
- (c) What is the Shutdown Price (SDP)?

2. You are competing in a long distance walking race. Your distance versus time graph is shown in the figure below.



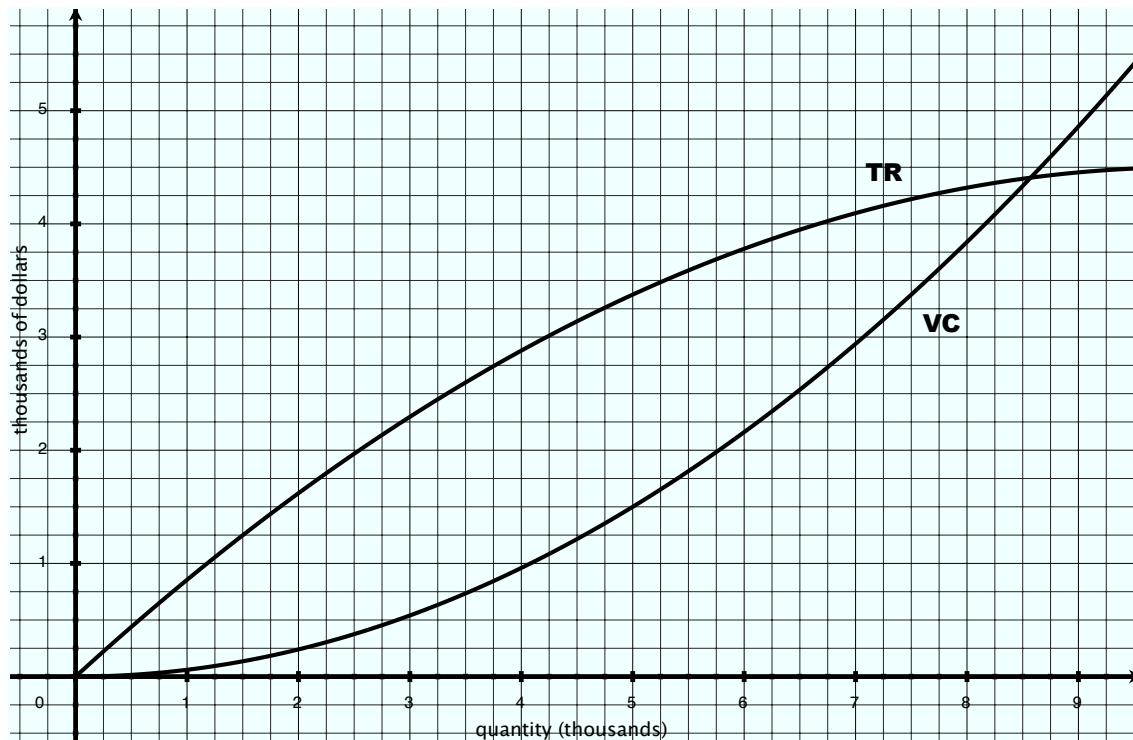
- (a) Find a time at which your overall average speed is 3.5 miles per hour.
- (b) Find a 2-hour interval of time over which your incremental average speed is 2.9 miles per hour.
- (c) At what time is your overall average speed at its lowest?
- (d) Mary starts the race three hours after you do, and walks at a constant 5 miles per hour. When will she catch up to you?

3. You make and sell electric dog polishers. Your total cost (TC) versus quantity is graphed in the figure below. Note the units on both axes.



- (a) Find the marginal cost at $q = 750$.
- (b) What is the minimum quantity are which you can make a profit of at least \$500 if the market price is $p = \$10$?
- (c) What is the Shutdown Price (SDP)?
- (d) If you reduced your fixed cost (FC) to \$750, what would your Breakeven Price (BEP) be?

4. You make and sell tiny paper umbrellas. Your total cost (TC) and variable cost (VC) graphs are shown below. Note the units on the axes.



(a) Find a quantity at which marginal cost (MC) equals marginal revenue (MR).

(b) If your fixed cost (FC) is \$500, what is your maximum possible profit?

(c) If your fixed cost (FC) is \$1500, what is your profit when $MR = 0.3$?