

MATH 111C
Exam I
October 19, 2006

Name _____

Student ID # _____

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.”

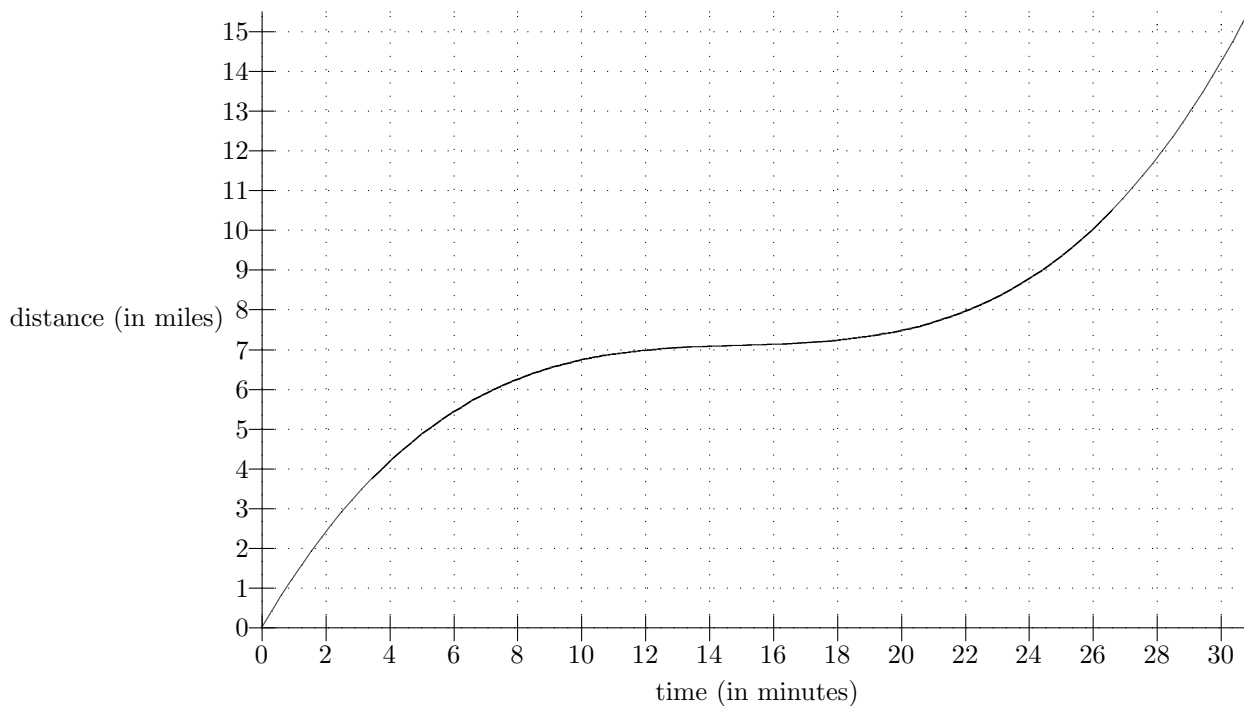
SIGNATURE: _____

1	16	
2	17	
3	17	
Total	50	

- Please check that your exam contains 3 problems.
- Please turn your cell phone OFF and put it away for the duration of the exam.
- Unless otherwise indicated, you must show your work. Clearly label lines and points that you are using and show all calculations. The correct answer with no supporting work may result in no credit.
- Put your name on your sheet of notes and turn it in with the exam.

GOOD LUCK!

1. (16 points) The following graph shows distance traveled by a moving object after t minutes.



- (a) On average, how fast does the object travel over the first ten minutes?

ANSWER: _____ miles per minute

- (b) What is the smallest value of average trip speed?

ANSWER: _____ miles per minute

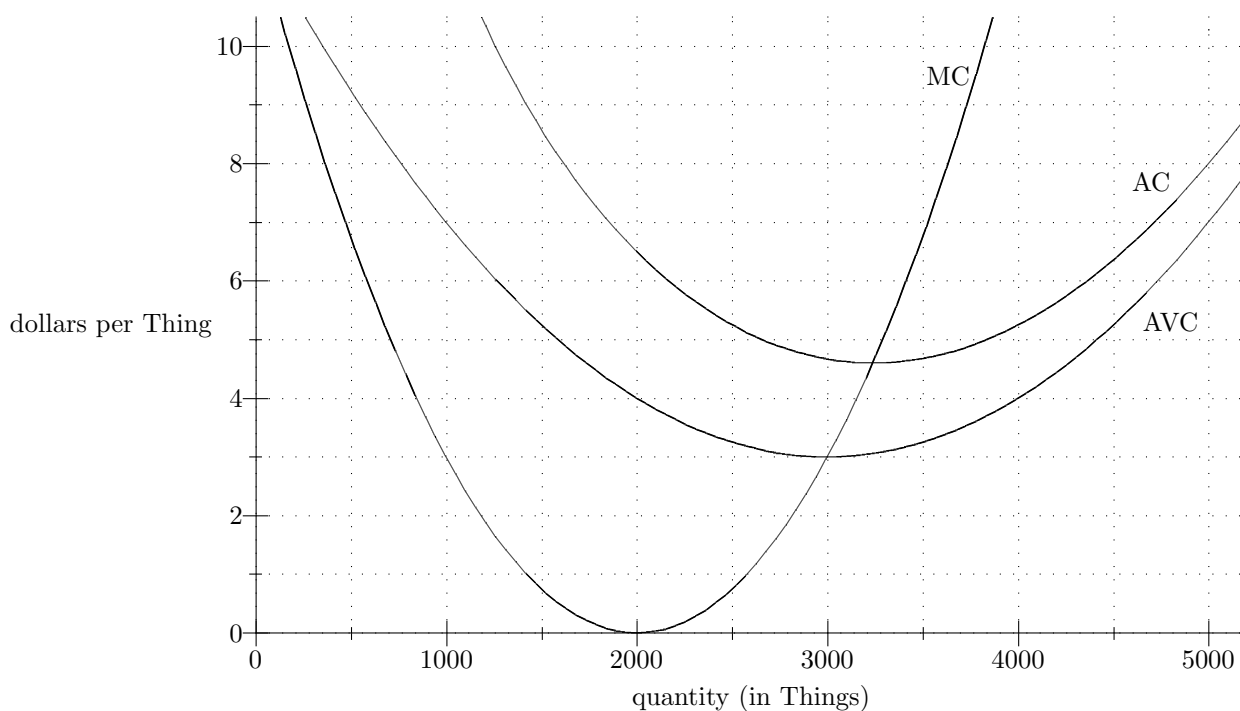
- (c) Find a two-minute interval during which the change in distance is one mile.

ANSWER: from $t =$ _____ to $t =$ _____

- (d) Find a time at which the average speed over the next four minutes is the same as the average speed over the four-minute interval starting at $t = 24$.

ANSWER: $t =$ _____ minutes

2. (17 points) You produce and sell *Things*. The graph below shows your marginal cost (MC), average cost (AC), and average variable cost (AVC).



- (a) What is the break even price?

ANSWER: \$ _____

- (b) What is the total cost (TC) of producing 2000 Things?

ANSWER: \$ _____

- (c) What is the variable cost (VC) of producing 2000 Things?

ANSWER: \$ _____

- (d) What is the value of fixed cost (FC)?

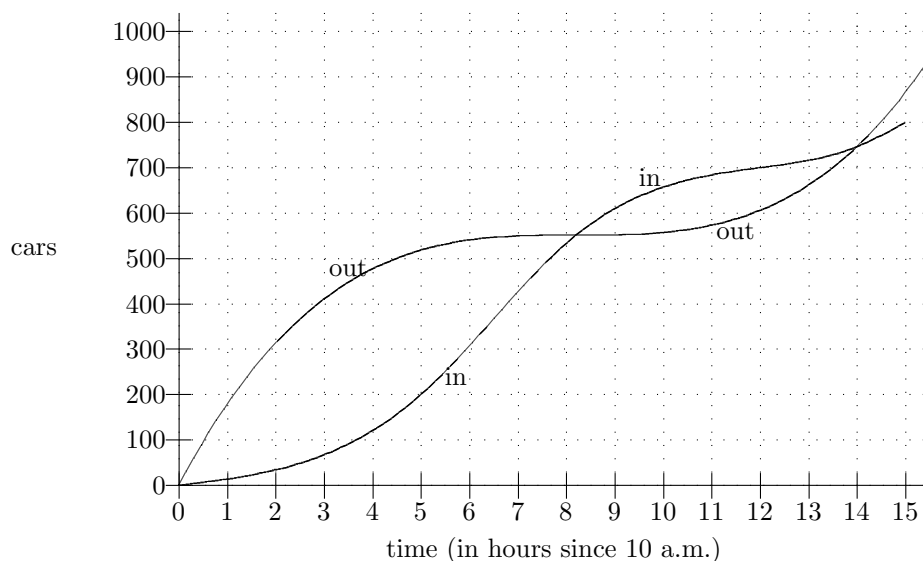
ANSWER: \$ _____

- (e) Suppose the market price for Things is \$6 per Thing. How many Things should you sell in order to maximize profit and what will that maximum profit be?

ANSWER: $q =$ _____ Things

max profit is \$ _____

3. (17 points) A counter at the gate of an airport parking lot keeps track of the number of cars that have come into the lot since 10 a.m. Another counter keeps track of the number of cars that have left the lot since 10 a.m. The two graphs below show the number that have come in and gone out over a fifteen-hour period. Let $C(t)$ represent the number of cars in the lot t hours after 10 a.m. The lot contains 2500 cars at 10 a.m. (That is, $C(0) = 2500$.)



- (a) Translate the following statement into English and then decide if it is true or false:

$$C(6) < C(7).$$

TRANSLATION:

(circle one) true false

- (b) Name the second time at which the overall rate of flow *in* is the same as the overall rate of flow *out*.

ANSWER: $t =$ _____ hours after 10 a.m.

- (c) Find a one-hour interval during which fewer than 100 cars left the lot.

ANSWER: from $t =$ _____ to $t =$ _____

- (d) On average, how many cars entered the lot per hour during the four-hour interval starting at 10 a.m.?

ANSWER: _____ cars per hour