

Math 111
Exam 1
January 29, 2009

Name: _____

Quiz Section: _____

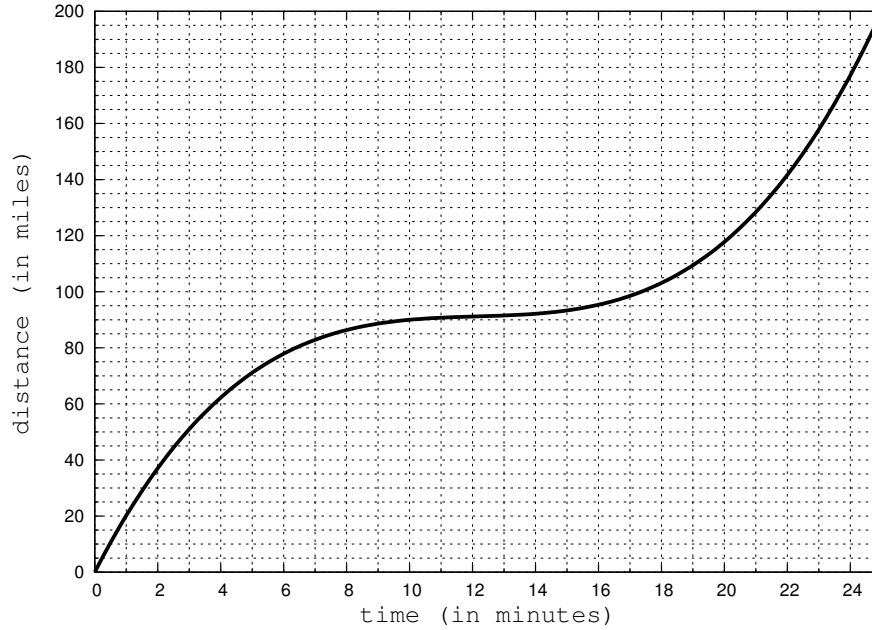
Student ID Number: _____

1	13	
2	13	
3	13	
4	11	
Total	50	

- You are allowed to use a calculator, a ruler, and one **hand-written** 8.5 by 11 inch page of notes. Put your name on your sheet of notes and turn it in with the exam.
- Check that your exam contains all the problems listed above.
- You must **show and explain your work** on all problems. The correct answer with no supporting work may result in no credit. On problems in which you use a graph, draw lines and *clearly* label them in the graph.
- Raise your hand if you have a question.
- There are multiple versions of the exam so if you copy off a neighbor and put down the answers from another version we will know you cheated. Any student found engaging in academic misconduct will receive a score of 0 on this exam. All suspicious behavior will be reported to the student misconduct board. In such an instance, you will be force to meet in front of a board of professors to explain your actions.
DO NOT CHEAT OR DO ANYTHING THAT LOOKS SUSPICIOUS!
WE WILL REPORT YOU AND YOU MAY BE EXPELLED!
- You have 50 minutes to complete the exam.

GOOD LUCK!

1. (13 points) The following graph shows the total distance, $D(t)$, traveled by a moving object after t minutes.



- (a) (3 pts) Compute the average speed during the 3-minute interval starting at $t = 2$ minutes?

ANSWER: _____ miles per minute

- (b) (3 pts) What is the smallest value of average trip speed?

ANSWER: _____ miles per minute

- (c) (3 pts) Find a 4-minute interval over which the average speed is the same as the average speed from $t = 6$ to $t = 10$.

ANSWER: From $t =$ _____ to $t =$ _____ minutes

- (d) (4 pts) Translate the following into English and find the answer(s):

“Find all values of t such that $\frac{D(t)}{t} = 6.5$.”

TRANSLATION:

ANSWER: $t =$ _____ minutes

2. (13 points) You sell Fronzies. The following chart gives the values of marginal revenue and marginal cost at different quantities.

q (in Fronzies)	0	1	2	3	4	5	6	7	8	9
MR (in dollars)	22	19	16	13	10	7	4	1	-2	-5
MC (in dollars)	8	7	6	5	5	5	5	5	5	5

- (a) (3 pts) What is your total revenue if you sell 3 Fronzies?

ANSWER: _____ dollars

- (b) (3 pts) Which quantity will maximize profit?

ANSWER: $q =$ _____ Fronzies

- (c) (3 pts) Recall that $AVC(q) = \frac{VC(q)}{q}$. What is average variable cost at $q = 2$ Fronzies?

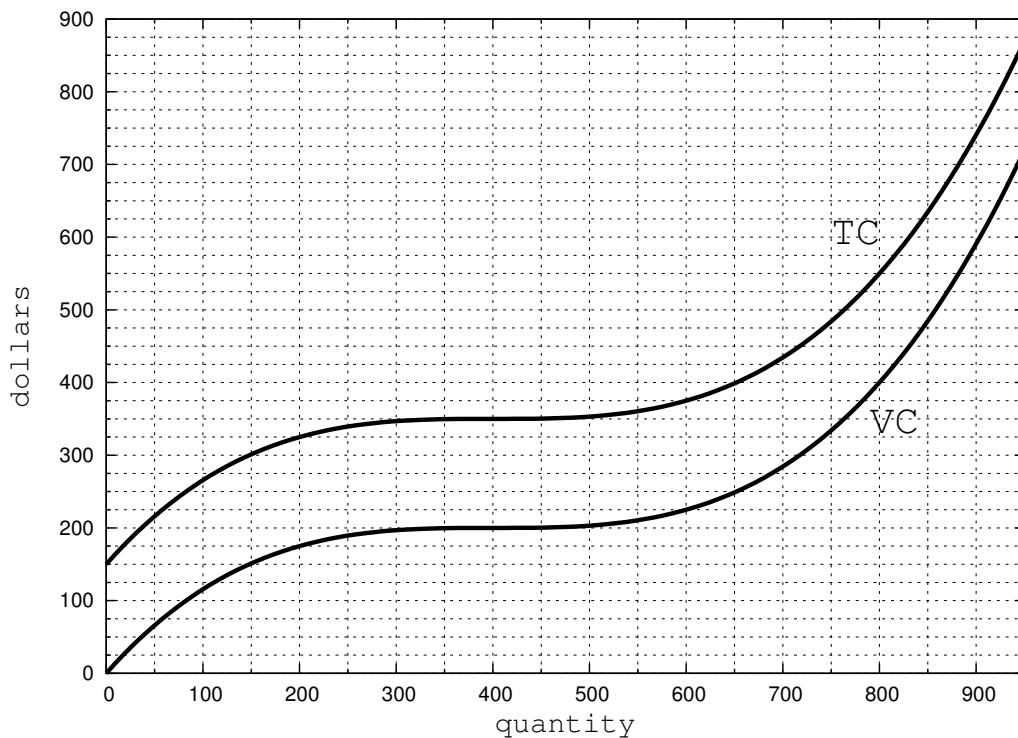
ANSWER: $AVC(2) =$ _____ dollars per Fronzy

- (d) (4 pts) Translate the following into functional notation and determine if it is true or false:
 “The change in total cost from $q = 3$ to $q = 6$ is greater than 18.”

TRANSLATION:

ANSWER: (circle one) TRUE FALSE

3. (13 points) Ron sells commemorative inaugural key-chains. The graphs of total cost and variable cost for producing key-chains are given.



- (a) (2 pts) Find the fixed costs (FC).

ANSWER: $FC =$ _____ dollars

- (b) (3 pts) Compute the Shut Down Price (SDP).

ANSWER: _____ dollars

- (c) (4 pts) Recall that $AC(q) = \frac{TC(q)}{q}$.

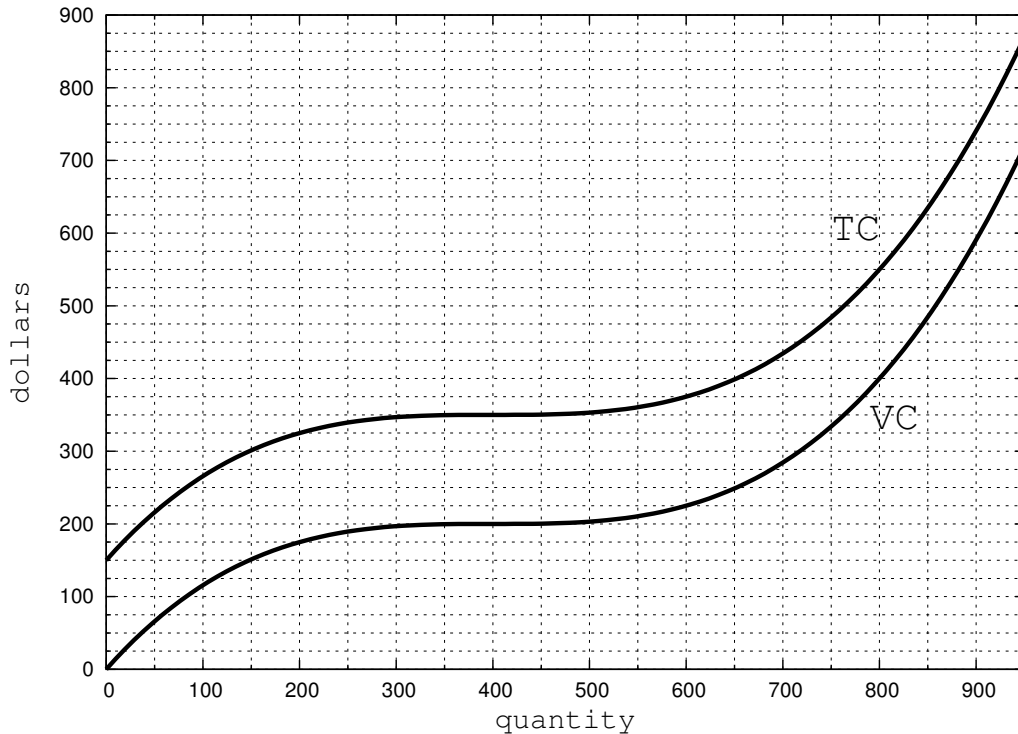
At what quantity is the average cost equal to 2 dollars per key-chain?

ANSWER: $q =$ _____ key-chains

- (d) (4 pts) Give all quantities at which the cost of the next item (MC) is 0.50 dollars.

ANSWER: $q =$ _____ key-chains

4. (11 pts) The following question pertains to the same graphs as the previous page. For your convenience, here are the graphs again.



In addition, for all questions below, the **market price is set at 0.80 dollars per key-chain**.

- (a) (4 pts) Draw and label the total revenue graph that corresponds to this market price, then give the longest interval over which profit is positive.

ANSWER: From $q =$ _____ to $q =$ _____ key-chains

- (b) (3 pts) Give the value of the maximum profit.

ANSWER: _____ dollars

- (c) (4 pts) Of the four values below indicate which is largest and which is smallest?
(Write the letter for your answers on the lines below and explain your work)

- A. Marginal Cost at $q = 400$.
- B. Marginal Revenue at $q = 400$.
- C. Average Cost at $q = 400$.
- D. Average Variable Cost at $q = 400$.

ANSWERS : SMALLEST = _____ and LARGEST = _____