MATH 111
Exam I
October 25, 2007

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."

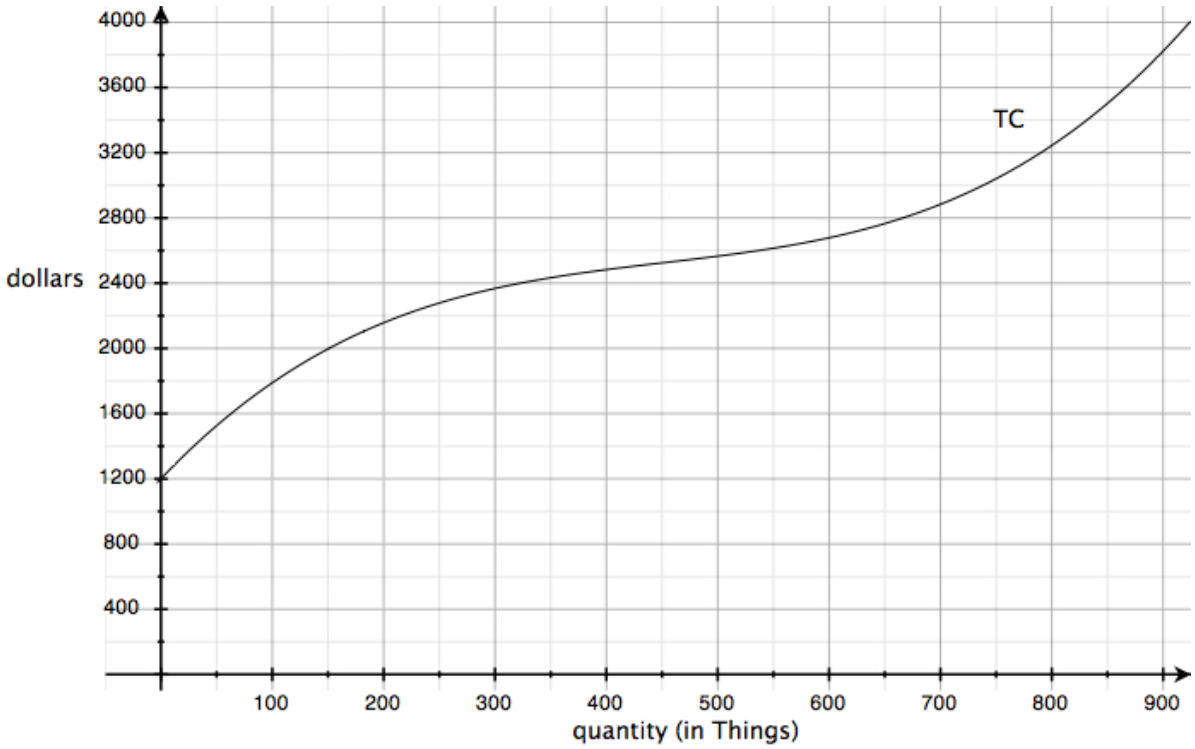
SIGNATURE:_____

1	16	
2	18	
3	16	
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) Below is the graph of **total cost** for producing *Things*.



(a) Find the value of each of the following:

i. fixed cost (FC)

ANSWER: \$_____

ii. the breakeven price

ANSWER: \$_____per Thing

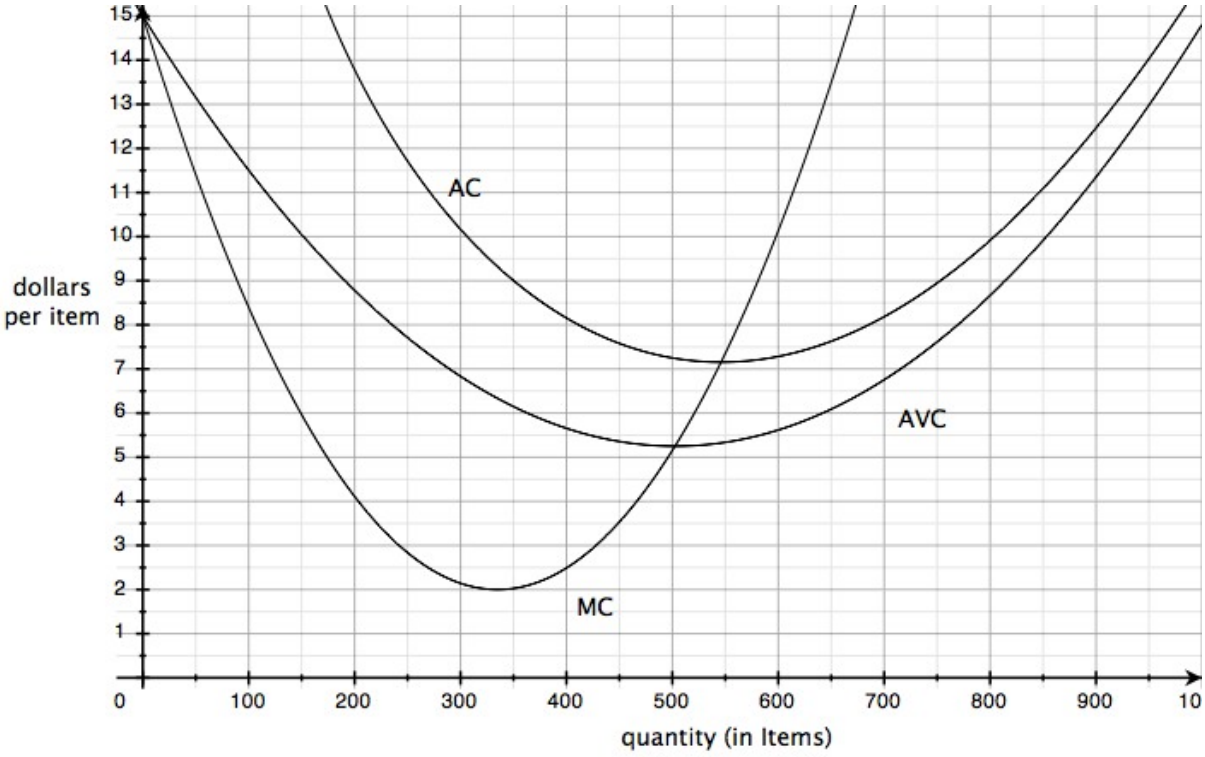
iii. the variable cost (VC) to produce 200 Things

ANSWER: \$_____

(b) Suppose the market price is \$5.00 per Thing. Find the quantity that maximizes profit.

ANSWER: $q =$_____

2. (18 points) Below are the graphs of **marginal cost**, **average cost**, and **average variable cost** for producing *Items*.



(a) Find each of the following:

i. the breakeven price

ANSWER: _____dollars per Item

ii. the shutdown price

ANSWER: _____dollars per Item

iii. the cost to produce the 301^{st} Item

ANSWER: _____dollars

iv. the **total cost** to produce 300 Items

ANSWER: _____dollars

(b) Suppose the **market price** is \$10 per Item and that **fixed costs** are \$500.

i. Sketch and label the graph of **marginal revenue** on the axes above.

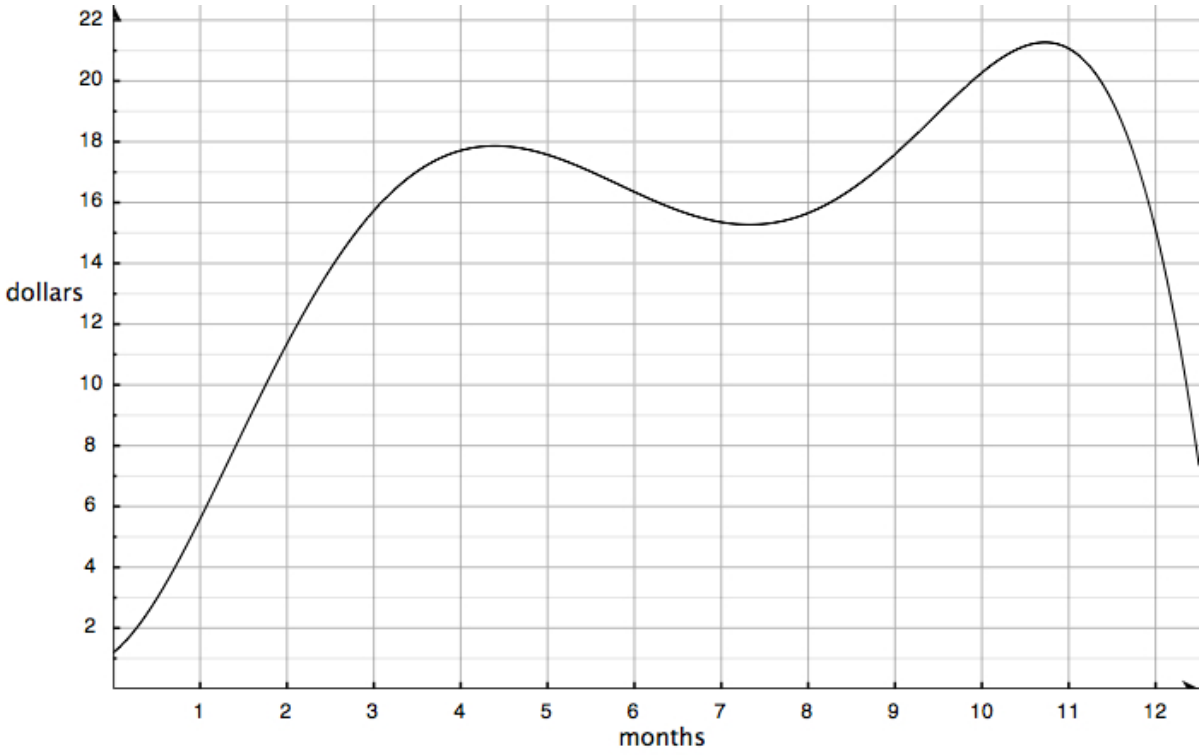
ii. Give the longest interval of quantities over which **profit** is increasing.

ANSWER: from $q =$_____to $q =$_____Items

iii. What is your profit if you make and sell 500 Items?

ANSWER: _____dollars

3. (16 points) The graph below shows the price per share of the common stock of TaterTech Inc. over a twelve-month period.



(a) Find the incremental rate of change in the price of TTI stock during the four-month period beginning at $t = 2$.

ANSWER: \$_____

(b) Let $p(t)$ represent the price of the stock at time t. Translate the following into functional notation.

"Over the first seven months, the price of the stock rose on average by \$1.98 per month."

TRANSLATION:

(c) Find a time t such that $p(t+2) - p(t) = 3$.

ANSWER: $t =$_____months

(d) Suppose the stock price of another stock, PineApple Computers, is \$6 per share at $t = 0$ and increases by \$1.25 per month every month. Find the first time at which the two stocks have the same **overall rate of change**.

ANSWER: $t =$_____months