MATH 112
Quiz 2
Spring 2023

Name _____

Student ID #_____

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:_____

- This quiz consists of one page of questions (on the back of this sheet).
- You will have 25 minutes from the moment the TAs tell you to start.
- You are allowed to use a non-graphing scientific calculator, a ruler, and one 8.5 by 11 inch sheet of handwritten notes (front and back). All other sources are forbidden.
- Turn your cell phone OFF and put it away for the duration of the test prep. You may not listen to headphones or earbuds during the quiz.
- **You must show your work.** Clearly show your work. The correct answer with no supporting work may result in no credit.
- Unless otherwise indicated, when rounding is necessary, you may round your final answer to two digits after the decimal.
- **Do not write within 1 centimeter of the edge!** Your test prep will be scanned for grading.
- There are multiple versions of the quiz, you have signed an honor statement, and cheating is a hassle for everyone involved. If we find that you give an answer that is only appropriate for the other version of the quiz and there is no work to support your answer, then you will get a zero on the entire test prep and your work will be submitted to the academic misconduct board. JUST DO NOT CHEAT.

GOOD LUCK!

1. (10 pts) You sell items. The functions for marginal revenue and marginal cost (in dollars/item) are given by

$$MR(q) = 9e^{0.02q} \text{ and } MC(q) = q^2 - 6q + 124,$$

where q is in thousands of items. You are also told that Fixed Costs are given $FC = 13$ thousand dollars (so $TC(0) = 13$).

(a) Give the functions for Total Revenue and Total Cost (solve for the constants of integration).

$TR(q)$ = _____

$TC(q)$ = _____

(b) Find the largest and smallest values of Marginal Cost on the interval $q = 0$ to $q = 10$.

'smallest value of MC' = _____ dollars/item
'largest values of MC' = _____ dollars/item

(c) Recall: $AC(q) = \frac{TC(q)}{q}$.
Determine if $AC(q)$ is concave up, concave down, or neither at $q = 1$ thousand items. (In your work, you MUST find the second derivative of $AC(q)$ and make correct conclusions).

ANSWER: $AC''(q)$ = _____
(Circle one) CONCAVE UP CONCAVE DOWN NEITHER