MATH 108
Fall 2021
HW 3: Due 09/28

"This year I'm lovin' someone who deserves me. Me."
— Suzanne 'Crazy Eyes' Warren, Orange is the New Black

Problem 1. (10pt) Let $C(x)$ be the cost function given by $C(x) := 3.50x + 15$.

(a) Find the total cost in producing 100 items.

(b) If the company makes 100 items, what is the average cost of production per item?

(c) What is the production cost per item?

(d) Find the y-intercept for $C(x)$.

(e) Interpret your answer from (d).

Problem 2. (10pt) Let $R(x)$ be the revenue function given by $R(x) := 15.99x$.

(a) What is the price per item that the company sets?

(b) How much revenue is gained by selling 150 items?

(c) How many items would the company need to sell to make at least \$2,000 in revenue?

Problem 3. (10pt) Let the revenue and cost functions for a company be given by $R(x) := 24.99$ and $C(x) = 11.20x + 560$.

(a) Find the profit function, $P(x)$.

(b) Find the breakeven point.

(c) What does the breakeven point represent on the graph of $P(x)$?

(d) Sketch the functions $R(x), C(x)$ and $P(x)$ along with the breakeven point.

Problem 4. (10pt) A fine dining restaurant orders high-quality salmon for their menu. When bought in bulk, each salmon costs $11.99 and there is a flat delivery fee of $210. To turn profit on the fish orders, the restaurant marks the price up by 80%. What is the smallest number of salmon they have to order and sell to make a profit on their salmon sales?