12/5

- Review Chapter 4 now
- Final Exam is next Friday
- Lab 4 Sheet will be collected at the Final
- A is 4/3

4.3: Systems of Linear Equations and Problem Solving

Cost and Revenue Functions

Break even: \( C(x) = R(x) \)

\[ C(x) = 14x + 76000 \]
\[ R(x) = 16x \]

\[ 14x + 76000 = 16x \]
\[ 2x = 76000 \]
\[ x = 3800 \]

To make Cost / Revenue functions:

\[ R = \text{Revenue} \]
\[ C = \text{Cost} \]
\[ x = \text{Quantity Produced} \]
\[ p = \text{Price} \]

\[ R = x \cdot p \]
\[ C = (\text{Variable Costs}) \cdot x + \text{Fixed Costs} \]
- Return graded work
- Final exam deets
- Lab 4 Sheet will be collected at the final
- Assignment 4.3

4.3: Systems of Linear Equations and Problem Solving

Cost and Revenue Function

Break even: \( C(x) = R(x) \)

\[ C(x) = 14x + 36000 \]
\[ R(x) = 16x \]

\[ \frac{14x + 36000}{16} = x \]
\[ 14x = 36000 \]
\[ x = 18000 \]

To make Cost / Revenue functions:

\[ R = \text{revenue} \]
\[ C = \text{cost} \]
\[ x = \text{quantity sold} \]
\[ p = \text{price} \]

\[ R = x \cdot p \]
\[ C = (\text{variable costs}) \cdot x + \text{fixed costs} \]
A. \( R(x) = 550x + 450, \) (the chair price)

B. \( C(x) = 7000 + 200x \) (the variable cost)

\[550x + 450 = 7000 + 200x\]

\[
\begin{align*}
550x - 200x & = 7000 - 450 \\
350x & = 6550 \\
x & = 19
\end{align*}
\]

\( x = 20 \)

20 desks must be sold to break even.

Solving systems of linear equations

1. Re-arrange the problem to find the needed quantities, define variables for each quantity.

2. Translate the statements into equations.

3. Solve the equations.

4. Interpret the solution with respect to the definitions.

Ex. 3: We must find:

- The number of small franses = \( S \)
- The number of large franses = \( L \)
- The cost of plain franses = \( C \)
- The cost of plain franses = \( B \)
Ex 2.5 \[ S = X \]
\[ 0 = X - 8 \]

\[ S = \text{Second number} \]
\[ F = \text{First number} \]

\[ F = X - 8 \]
\[ S = 2X + 8 \]
\[ S + F = 16 \]
\[ 2X + 8 + X - 8 = 16 \]
\[ 3X = 16 \]
\[ X = \frac{16}{3} \]

\[ Y = \text{quarts of 1% buttermilk} \]
\[ X = \text{quarts of 6% buttermilk} \]

Ex 4.2
\[ S + L = 16 \]
\[ 4L + 7S = 160 \]

Ex 4.2
\[ 5D + 4B = 14.25 \]
\[ 4D + 5B = 15.00 \]

Ex 4.2
\[ 0.05 \times 10 + 0.01y = 100 \]
\[ 0.06x + 0.01y = 24 \]
\[ x + y = 100 \]

Ex 4.2
\[ \rho \approx 1.04 \]
\[ \rho \approx 1.3 \]
\[ \rho_{\text{op}} \]
\[ 3000 = (V_2)^2 \cdot 4 \]
\[ V_2 = \rho - w \]