Math 1320

Instructions: Solve the following problems. Show all your work in order to get full credit.

Problem 1. Your college newspaper, The Collegiate Investigator, has fixed production costs of $70 per edition, and marginal printing and distribution costs of 40¢/copy. The Collegiate Investigator sells for 50¢/copy.

a) Write down the associated cost, revenue, and profit functions.

\[
\text{Cost function: } C(x) = 0.40x + 70 \quad 20\text{ pts}
\]

\[
\text{Revenue function: } R(x) = 0.50x \quad 20\text{ pts}
\]

\[
\text{Profit function: } P(x) = 0.50x - (0.40x + 70) \quad 20\text{ pts}
\]

\[
P(x) = 0.10x - 70 \quad 20\text{ pts}
\]

b) What profit (or loss) results from the sale of 500 copies of The Collegiate Investigator?

\[P(500) = 0.10(500) - 70 = -20\]

loss \quad 20\text{ pts}

(c) How many copies should be sold in order to break even?

\[
\text{Profit} = 0
\]

\[
0.10x - 70 = 0
\]

\[
0.10x = 70
\]

\[
x = \frac{70}{0.10}
\]

\[
x = 700 \text{ copies} \quad 20\text{ pts}
\]