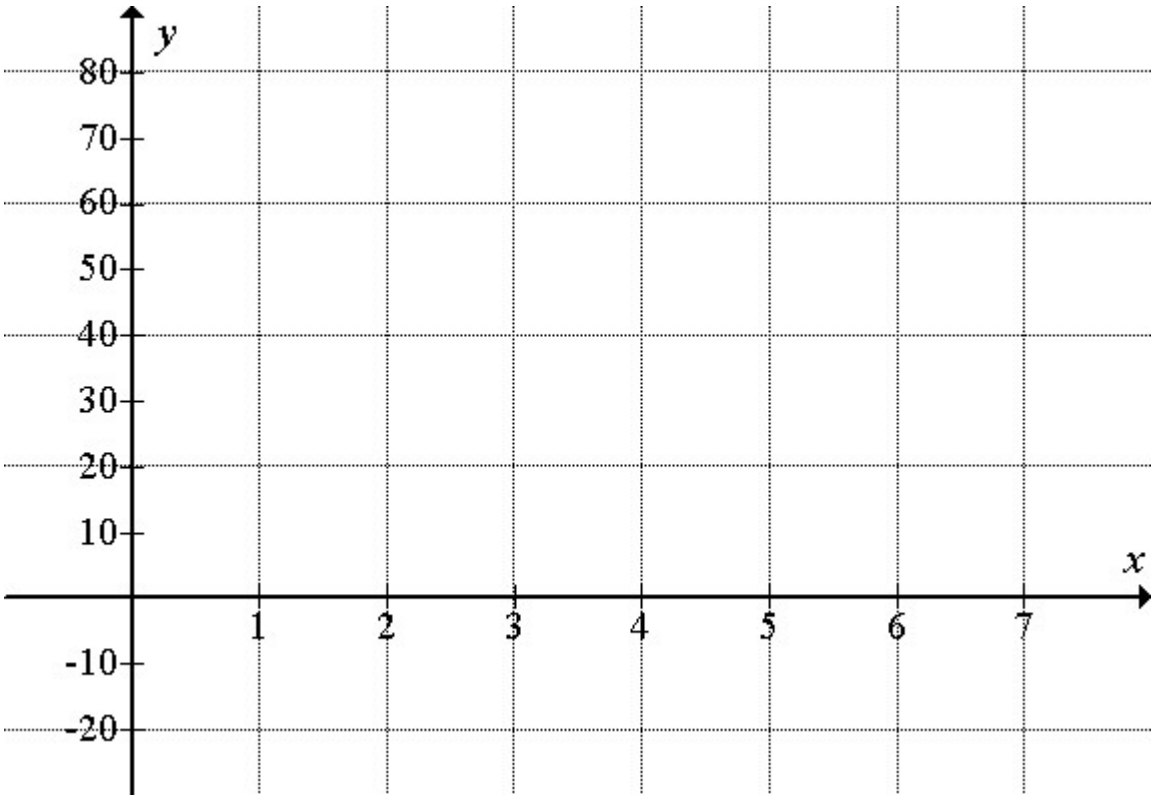
Sheet #440. Maximizing Profit Name: _____ Period: ____

A company wants to maximize its profit. Let $x = q$ be the number of items sold in **thousands** (same as produced).
Cost (in thousands of dollars) = $C = x^3 - 6x^2 + 15x + 5$.
Revenue (in thousands of dollars) = $R = 10x$

a) Sketch the functions C and R in the window [0, 7] by [-20, 80].



b) What are the fixed costs?

c) What is the price per item?

d) For what x does the company break even?

e) Looking at the graph you sketched, approximately for what x is the profit maximized?

f) Use a calculator to find x at the maximum profit. What is maximum profit?

g) Sketch the Profit = $\Pi = R - C$ to confirm your answer.

h) What algebraic equation do you need to solve for maximum profit? (If you run out of time, don't solve it)

i) What is the meaning of the two solutions to the above equation?