QUIZ 7 - MATH 112 YOUR NAME:

Friday, March 21 George Voutsadakis

Read each problem **very carefully** before starting to solve it and do only what is asked. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [6 points] A homeowner wishes to use 600 feet of fence to enclose two identical adjacent pens, as in the diagram. We want to find the dimensions that maximize the area enclosed.



(a) Write an equation for the objective function, clearly explaining what the variables used stand for.

(b) Find an auxiliary equation (if needed) and solve it for one of the variables.

(c) Return to the objective function and use it to optimize.

- 2. [6 points] A store can sell 12 cell phones per day at the price of \$200 each. The manager estimates that for each \$10 price reduction, 2 more cell phones can be sold. Suppose the cost per phone is \$80. Let x denote the number of \$10 reductions.
 - (a) Write an equation for the price

p(x) =

(b) Write an equation for the quantity sold

q(x) =

(c) Write equations for the cost C(x), the revenue R(x) and the profit P(x),

C(x) =

R(x) =

P(x) =

(d) Find the price that the manager needs to set to maximize the store's profit.