Math 220-02 Quiz 8 TAKE HOME _____

SHOW ALL YOUR WORK

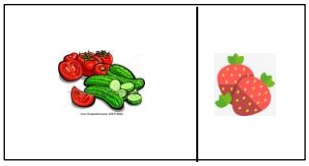
1. In 2007, a video store owner rented videos for $2/night. Each week an average of 1400 videos were rented. A consultant told the owner that for every increase in the rental price of $0.20, he'd rent 100 fewer videos.

   a) What price did the owner have to charge for a video rental so his revenue was maximized? Clearly define variables and functions.

   b) What was video demand at this price?

2. A gardener has 180 ft of wire fencing to enclose the two adjacent garden patches, as shown. Each line segment represents a stretch of fencing. What should the dimensions of each patch be so the maximum area will be enclosed?

3. a) Write the elasticity function for a commodity that has a given demand $q(p) = \frac{500}{p^2}$.

b) What does your answer tell you by the relationship of revenue to price for this commodity?

Justify your answer by examining $R'(p) = q(1 - E)$ for your E.

4. Find the indicated partial derivatives:

a) $f(x, y) = 7\sqrt{xy} - x^2 y$

$f_x =$

$f_y =$

b) $g(x, y) = 5e^{2x-y} - \ln(x + 2y)$

$g_x =$

$g_y =$