General Algebra 2 Worksheet #8 Unit 9 page 1 _____

Use an appropriate second degree function to solve each of the following problems. Show your work neatly organized.

1. A rectangle has two sides on the coordinate axes and one vertex in the first quadrant on the line $2x + 5y = 30$. What are the dimensions of the rectangle if its area is a maximum? What is the maximum area?

2. Sue wants to fence in a rectangular plot of land and to divide it into three equal areas using two lengths of fencing parallel to two opposite sides. If she has a total of 2000 feet of fencing to work with, then find the dimensions that will maximize the total area enclosed.

Use an appropriate second degree function to solve each of the following problems. Show your work neatly organized.

3. A television set manufacturer can sell 400 sets per month for $600 per set. Marketing research indicates that the company can sell 25 more sets per month for each $20 decrease in price. What price per set will give the greatest monthly income? What is the maximum monthly income?

4. A long piece of sheet metal 20 inches wide is to be made into a rain gutter with a rectangular cross section by bending up a vertical strip along each side. How many inches should be bent up along each side so that the gutter formed has a maximum cross-sectional area?

6. The summer theater charges $3 per ticket and has a full house of 360 people nightly. The manager estimates that the ticket sales would decrease by 60 people for every $1 increase in the ticket price. What price per ticket would maximize the total income?