

Quadratic Functions: Max/Min Problems

Example: You have a 500-foot roll of fencing and a large field. You want to construct a rectangular playground area

a. Write the equation of the function for the area of the playground in terms of its width.

b. What is the area of the playground when the width is 100 feet?

c. What are the dimensions of the largest such yard?

d. What is the largest area?

Quadratic Functions: Max/Min Problems

1. You have a 1200-foot roll of fencing and a large field. You want to make two paddocks by splitting a rectangular enclosure in half.

a. Write a function for the total area of the paddocks in terms of the width of the paddocks.

b. What is the width of the paddock when the area is _____?

c. What are the dimensions of the largest such enclosure?

d. What is the area of the largest possible enclosure?

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2. Your factory produces lemon-scented widgets. You know that each unit is cheaper, the more you produce. But you also know that costs will eventually go up if you make too many widgets, due to the costs of storage of the overstock. The guy in accounting says that your cost for producing x thousands of units a day can be approximated by the formula $C = 0.04x^2 - 8.504x + 25302$.

a. Find the cost when you manufacture 20,000 widgets

b. How many widgets should you make if you want to spend \$50,000?

c. Find the daily production level that will minimize your costs.

d. What is the minimum cost?