1. [–/4 Points] DETAILS SCALCET9 4.7.002.MI.

Find two numbers whose difference is 88 and whose product is a minimum.

smaller number

larger number

Need Help? Master It

2. [–/2 Points] DETAILS SCALCET9 4.7.002.MI.SA.

This question has several parts that must be completed sequentially. If you skip a part of the question, you will not receive any points for the skipped part, and you will not be able to come back to the skipped part.

Tutorial Exercise

Find two numbers whose difference is 76 and whose product is a minimum.

Click here to begin!

3. [–/2 Points] DETAILS SCALCET9 4.7.007.MI.SA.

This question has several parts that must be completed sequentially. If you skip a part of the question, you will not receive any points for the skipped part, and you will not be able to come back to the skipped part.

Tutorial Exercise

Find the dimensions of a rectangle with perimeter 72 m whose area is as large as possible.

Click here to begin!

4. [–/4 Points] **DETAILS** SCALCET9 4.7.012.

Consider the following problem: a box with an open top is to be constructed from a square piece of cardboard, 3 feet wide, by cutting out a square from each of the four corners and bending up the sides. Find the largest volume that such a box can have.

(a) Draw several diagrams to illustrate the situation, some short boxes with large bases and some tall boxes with small bases. Find the volume of each configuration. Does it appear that there is a maximum volume? If so, estimate it.

(b) Draw a diagram illustrating the general situation. Let x denote the length of the side of the square being cut out. Let y denote the length of the base.

(c) Write an expression for the volume V in terms of both x and y.

$V =$

(d) Use the given information to write an equation that relates the variables x and y.

(e) Use part (d) to write the volume as a function of only x.

$V(x) =$

(f) Finish solving the problem by finding the largest volume (in ft^3) that such a box can have.

$V =$ ft^3

5. [–/2 Points] DETAILS SCALCET9 4.7.018.

A box with a square base and open top must have a volume of 4,000 cm^3. Find the dimensions of the box (in cm) that minimize the amount of material used.

sides of base [ ] cm

height [ ] cm

6. [–/2 Points] DETAILS SCALCET9 4.7.025.

Find the point on the line $y = 3x + 5$ that is closest to the origin.

$(x, y) =$ ([ ] [ ])

Need Help? Watch It

7. [–/2 Points] DETAILS SCALCET9 4.7.043.

A piece of wire 27 m long is cut into two pieces. One piece is bent into a square and the other is bent into an equilateral triangle. (Round your answers to two decimal places.)

(a) How much wire (in meters) should be used for the square in order to maximize the total area?

m

(b) How much wire (in meters) should be used for the square in order to minimize the total area?

m

Need Help? Watch It

8. [–/2 Points] DETAILS SCALCET9 4.7.045.

If you are offered one slice from a round pizza (in other words, a sector of a circle) and the slice must have a perimeter of 28 inches, what diameter pizza (in inches) will reward you with the largest slice?

in

Need Help? Watch It