

Homework 8 (17808479)

Question


- 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15


1. Question Details

LarCalcET7 4.7.011. [4056640]

Find the length and width of a rectangle that has the given perimeter and a maximum area.

Perimeter: 160 meters


length   40 m


width   40 m

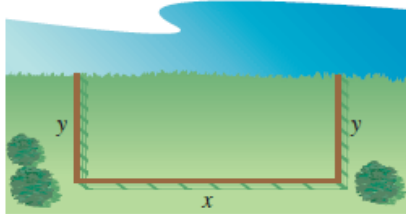
2. Question Details

LarCalcET7 4.7.019. [4056537]

A farmer plans to enclose a rectangular pasture adjacent to a river (see figure). The pasture must contain 245,000 square meters in order to provide enough grass for the herd. No fencing is needed along the river. What dimensions will require the least amount of fencing?

$x =$    700 m

$y =$    350 m



3. Question Details

LarCalcET7 4.7.020. [4056988]

A rectangular solid (with a square base) has a surface area of 121.5 square centimeters. Find the dimensions that will result in a solid with maximum volume.

 4.5 cm (smallest value)


 4.5 cm


 4.5 cm (largest value)

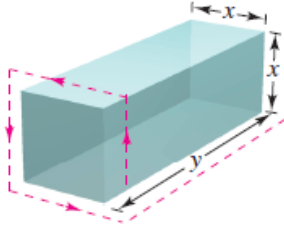
4. Question Details

LarCalcET7 4.7.029. [4056754]

A rectangular package to be sent by a postal service can have a maximum combined length and girth (perimeter of a cross section) of 102 inches (see figure). Find the dimensions of the package of maximum volume that can be sent. (Assume the cross section is square.)

$x =$    17

$y =$    34



5. Question Details

LarCalcET7 4.7.033.MI. [4056915]

A solid is formed by adjoining two hemispheres to the ends of a right circular cylinder. The total volume of the solid is 18 cubic centimeters. Find the radius of the cylinder that produces the minimum surface area. (Round your answer to three decimal places.)

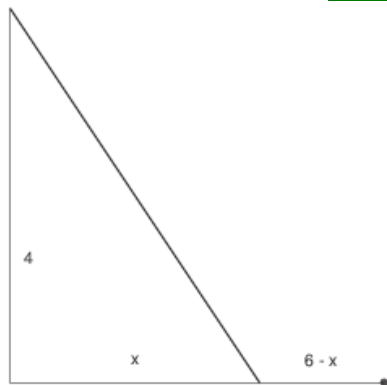
 1.626 cm

6. Question Details

LarCalcET7 4.7.039. [4056755]

An offshore oil well is 4 kilometers off the coast. The refinery is 6 kilometers down the coast (see figure). Laying pipe in the ocean is twice as expensive as on land. What path should the pipe follow in order to minimize the cost?

$x =$     $\frac{4}{\sqrt{3}}$  km

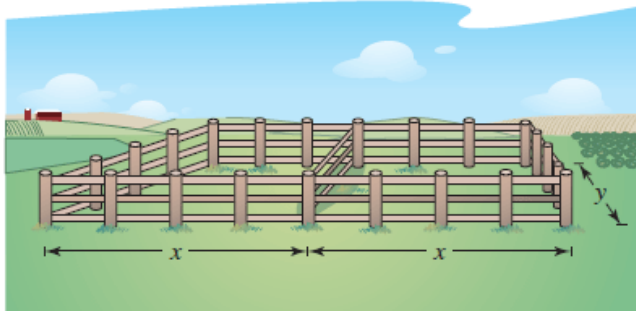


7. Question Details

LarCalcET7 4.7.503.XP. [4133774]

A rancher has 720 feet of fencing with which to enclose two adjacent rectangular corrals (see figure). What dimensions should be used so that the enclosed area will be a maximum?



$x =$    90 ft  
 $y =$    120 ft



8. Question Details

LarCalcET7 4.7.030. [4056939]

A cylindrical package to be sent by a postal service can have a maximum combined length and girth (perimeter of a cross section) of 147 inches. Find the dimensions of the package of maximum volume that can be sent. (The cross section is circular.)

radius    $\frac{49}{\pi}$  in  
 length   49 in

9. Question Details

LarCalcET7 4.7.015. [4056702]

Find the points on the graph of the function that are closest to the given point.

$$f(x) = x^2, \quad (0, 4)$$

$(x, y) =$     $\left(-\sqrt{\frac{7}{2}}, \frac{7}{2}\right)$  (smaller x-value)



$(x, y) =$     $\left(\sqrt{\frac{7}{2}}, \frac{7}{2}\right)$  (larger x-value)

10. Question Details

LarCalcET7 4.8.017. [4056713]

Use the information to find and compare  $\Delta y$  and  $dy$ . (Round your answers to four decimal places.)

$$y = x^4 + 3 \quad x = -5 \quad \Delta x = dx = 0.01$$

$\Delta y =$    -4.9850  
 $dy =$    -5.0000

11. Question Details

LarCalcET7 4.8.021. [4057152]

Find the differential  $dy$  of the given function. (Use "dx" for  $dx$ .)

$$y = 3x^2 - 6$$

$dy =$    $6x dx$

12. Question Details

LarCalcET7 4.8.025. [4057021]

Find the differential  $dy$  of the given function. (Use "dx" for  $dx$ .)

$$y = \frac{x + 1}{5x - 2}$$

$dy =$    $-\frac{7}{(5x - 2)^2} dx$

13. Question Details

LarCalcET7 4.8.041.MI. [4057205]

The total stopping distance  $T$  of a vehicle is shown below, where  $T$  is in feet and  $x$  is the speed in miles per hour.

$$T = 2.5x + 0.5x^2$$

Approximate the change and percent change in total stopping distance as speed changes from  $x = 25$  to  $x = 28$  miles per hour. (Round your answers to one decimal place.)

$dT =$    $82.5$  ft

$\frac{dT}{T} =$    $22.0$  %

14. Question Details

LarCalcET7 4.8.047. [4056352]

Use differentials to approximate the value of the expression. Compare your answer with that of a calculator. (Round your answers to four decimal places.)

$$\sqrt{24.4}$$

using differentials   $4.9400$

using a calculator   $4.9396$

15. Question Details

LarCalcET7 4.8.503.XP.MI. [4133853]

The side of a square floor tile is measured to be 20 inches, with a possible error of  $1/32$  inch. Use differentials to approximate the possible propagated error in computing the area of the square.

$\pm$    $5/4$  in<sup>2</sup>

Assignment Details

Name (AID): Homework 8 (17808479)

Submissions Allowed: 5

Category: Homework

Code:

Locked: No

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