Optimization with Derivatives · 1

A ball is thrown upward. Its height after t seconds is $h(t) = -5t^2 + 30t + 9$ meters. What is its maximum height?

Optimization with Derivatives · 2

Two positive numbers add up to 38. What is the largest possible value of their product?

Optimization with Derivatives · 3

You have 24 m of fencing to enclose a rectangle. What is the largest area you can enclose (in m^2)?

Optimization with Derivatives · 4

A company's profit from selling x items is $P(x) = -5x^2 + 100x - 250$ dollars. How many items should it sell to make the most profit?

Optimization with Derivatives · 5

A ball is thrown upward. Its height after t seconds is $h(t) = -16t^2 + 128t + 9$ feet. What is its maximum height?

Optimization with Derivatives · 6

Two positive numbers add up to 52. What is the largest possible value of their product?

Optimization with Derivatives · 7

A ball is thrown upward. Its height after t seconds is $h(t) = -5t^2 + 40t + 10$ meters. What is its maximum height?

Optimization with Derivatives · 8

You have 84 m of fencing to enclose a rectangle. What is the largest area you can enclose (in m^2)?

Optimization with Derivatives · 2

ANSWER

361

Optimization with Derivatives · 1

ANSWER

54

Optimization with Derivatives · 4

ANSWER

10

Optimization with Derivatives · 3

ANSWER

36

Optimization with Derivatives · 6

ANSWER

676

Optimization with Derivatives · 5

ANSWER

265

Optimization with Derivatives · 8

ANSWER

441

Optimization with Derivatives · 7

ANSWER

90

Optimization with Derivatives · 9

A ball is thrown upward. Its height after t seconds is $h(t) = -5t^2 + 40t + 3$ meters. What is its maximum height?

Optimization with Derivatives · 10

You have 60 m of fencing to enclose a rectangle. What is the largest area you can enclose (in m^2)?

Optimization with Derivatives · 11

A farmer has 136 ft of fencing to make a rectangular pen along a straight river; no fence is needed along the river. What is the largest area the pen can have (in ft^2)?

Optimization with Derivatives · 12

A company's profit from selling x items is $P(x) = -2x^2 + 60x - 100$ dollars. What is the largest possible profit?

Optimization with Derivatives · 13

Two positive numbers multiply to 64. What is the smallest possible value of their sum?

Optimization with Derivatives · 14

A farmer has 112 ft of fencing to make a rectangular pen along a straight river; no fence is needed along the river. What is the largest area the pen can have (in ft^2)?

Optimization with Derivatives · 15

You have 16 m of fencing to enclose a rectangle. What is the largest area you can enclose (in m^2)?

Optimization with Derivatives · 16

A company's profit from selling x items is $P(x) = -5x^2 + 200x - 400$ dollars. How many items should it sell to make the most profit?

Optimization with Derivatives · 10

ANSWER

225

Optimization with Derivatives · 9

ANSWER

83

Optimization with Derivatives · 12

ANSWER

350

Optimization with Derivatives · 11

ANSWER

2312

Optimization with Derivatives · 14

ANSWER

1568

Optimization with Derivatives · 13

ANSWER

16

Optimization with Derivatives · 16

ANSWER

20

Optimization with Derivatives · 15

ANSWER

16

Optimization with Derivatives · 17

A farmer has 128 ft of fencing to make a rectangular pen along a straight river; no fence is needed along the river. What is the largest area the pen can have (in ft²)?

Optimization with Derivatives · 18

A rectangle must have an area of 400 ft². What is the smallest perimeter it can have (in ft)?

Optimization with Derivatives · 19

An open box is made from a 6 in by 6 in sheet of cardboard by cutting equal squares from the corners and folding up the sides. What side length of square should be cut to make the volume as large as possible?

Optimization with Derivatives · 20

Two positive numbers add up to 16. What is the largest possible value of their product?

Optimization with Derivatives · 21

A company's profit from selling x items is $P(x) = -x^2 + 40x - 350$ dollars. How many items should it sell to make the most profit?

Optimization with Derivatives · 22

Two positive numbers multiply to 361. What is the smallest possible value of their sum?

Optimization with Derivatives · 23

An open box is made from a 24 in by 24 in sheet of cardboard by cutting equal squares from the corners and folding up the sides. What is the largest possible volume (in in³)?

Optimization with Derivatives · 24

A rectangle must have an area of 25 ft². What is the smallest perimeter it can have (in ft)?

Optimization with Derivatives · 18

ANSWER

80

Optimization with Derivatives · 17

ANSWER

2048

Optimization with Derivatives · 20

ANSWER

64

Optimization with Derivatives · 19

ANSWER

1

Optimization with Derivatives · 22

ANSWER

38

Optimization with Derivatives · 21

ANSWER

20

Optimization with Derivatives · 24

ANSWER

20

Optimization with Derivatives · 23

ANSWER

1024