Optimization with Derivatives · 1

An open box is made from a 15 in by 24 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 · 2

A rectangular garden of 648 ft² is fenced on all four sides. The fence along the front costs $5 per foot and the other three sides cost $4 per foot. What is the least possible cost of the fence (in dollars)?

Optimization with Derivatives · 3

An open-top box with a square base must hold 1372 cm³. What base side length uses the least material?

Optimization with Derivatives · 4

Two positive numbers x and y add up to 24. What is the largest possible value of $x \cdot y^2$?

Optimization with Derivatives · 5

An open box is made from an 18 in by 18 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 · 6

A rectangular garden of 180 ft² is fenced on all four sides. The fence along the front costs $9 per foot and the other three sides cost $6 per foot. What is the least possible cost of the fence (in dollars)?

Optimization with Derivatives · 7

A rectangular garden of 648 ft² is fenced on all four sides. The fence along the front costs $12 per foot and the other three sides cost $4 per foot. What is the least possible cost of the fence (in dollars)?

Optimization with Derivatives · 8

An open-top box with a square base must hold 256 cm³. What base side length uses the least material?

Optimization with Derivatives · 2

ANSWER

432

Optimization with Derivatives · 1

ANSWER

3

Optimization with Derivatives · 4

ANSWER

2048

Optimization with Derivatives · 3

ANSWER

14

Optimization with Derivatives · 6

ANSWER

360

Optimization with Derivatives · 5

ANSWER

3

Optimization with Derivatives · 8

ANSWER

8

Optimization with Derivatives · 7

ANSWER

576

Optimization with Derivatives · 9

An open box is made from a 5 in by 8 in sheet of cardboard by cutting equal squares from the corners and folding up the sides. What is the largest possible volume (in in^3)?

Optimization with Derivatives · 10

A rectangular garden of 864 ft^2 is fenced on all four sides. The fence along the front costs $12 per foot and the other three sides cost $6 per foot. What is the least possible cost of the fence (in dollars)?

Optimization with Derivatives · 11

An open-top box with a square base must hold 32 cm^3. What is the least amount of material (surface area in cm^2) it can use?

Optimization with Derivatives · 12

Two positive numbers x and y add up to 21. What is the largest possible value of $x \cdot y^2$?

Optimization with Derivatives · 13

An open box is made from an 18 in by 18 in sheet of cardboard by cutting equal squares from the corners and folding up the sides. What is the largest possible volume (in in^3)?

Optimization with Derivatives · 14

A rectangular garden of 1440 ft^2 is fenced on all four sides. The fence along the front costs $12 per foot and the other three sides cost $3 per foot. What is the least possible cost of the fence (in dollars)?

Optimization with Derivatives · 15

A rectangular garden of 336 ft^2 is fenced on all four sides. The fence along the front costs $11 per foot and the other three sides cost $3 per foot. What is the least possible cost of the fence (in dollars)?

Optimization with Derivatives · 16

Two positive numbers x and y add up to 9. What is the largest possible value of $x \cdot y^2$?

Optimization with Derivatives · 10

ANSWER

864

Optimization with Derivatives · 9

ANSWER

18

Optimization with Derivatives · 12

ANSWER

1372

Optimization with Derivatives · 11

ANSWER

48

Optimization with Derivatives · 14

ANSWER

720

Optimization with Derivatives · 13

ANSWER

432

Optimization with Derivatives · 16

ANSWER

108

Optimization with Derivatives · 15

ANSWER

336

Optimization with Derivatives · 17

An open box is made from a 9 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 in^3)?

Optimization with Derivatives · 18

A rectangular garden of 648 ft^2 is fenced on all four sides. The fence along the front costs $9 per foot and the other three sides cost $3 per foot. What is the least possible cost of the fence (in dollars)?

Optimization with Derivatives · 19

Two positive numbers x and y add up to 15. What is the largest possible value of $x \cdot y^2$?

Optimization with Derivatives · 20

An open box is made from a 36 in by 36 in sheet of cardboard by cutting equal squares from the corners and folding up the sides. What is the largest possible volume (in in^3)?

Optimization with Derivatives · 21

A rectangular garden of 384 ft^2 is fenced on all four sides. The fence along the front costs $12 per foot and the other three sides cost $6 per foot. What is the least possible cost of the fence (in dollars)?

Optimization with Derivatives · 22

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 in^3)?

Optimization with Derivatives · 23

A rectangular garden of 680 ft^2 is fenced on all four sides. The fence along the front costs $12 per foot and the other three sides cost $5 per foot. What is the least possible cost of the fence (in dollars)?

Optimization with Derivatives · 24

A rectangular garden of 270 ft^2 is fenced on all four sides. The fence along the front costs $4 per foot and the other three sides cost $6 per foot. What is the least possible cost of the fence (in dollars)?

Optimization with Derivatives · 18

ANSWER

432

Optimization with Derivatives · 17

ANSWER

200

Optimization with Derivatives · 20

ANSWER

3456

Optimization with Derivatives · 19

ANSWER

500

Optimization with Derivatives · 22

ANSWER

1024

Optimization with Derivatives · 21

ANSWER

576

Optimization with Derivatives · 24

ANSWER

360

Optimization with Derivatives · 23

ANSWER

680