Related Rates with Derivatives · 1

The radius of a circle is growing at 2 in/s. How fast is the circumference growing when the radius is 7 in?

Related Rates with Derivatives · 2

Each side of a square grows at 7 cm/s. How fast is the perimeter growing when each side is 20 cm?

Related Rates with Derivatives · 3

Each side of a square grows at 4 m/min. How fast is the area growing when each side is 15 m?

Related Rates with Derivatives · 4

A circular oil spill spreads so that its radius grows at 1 m/min. How fast is the area growing when the radius is 14 m?

Related Rates with Derivatives · 5

Each edge of a cube grows at 1 in/s. How fast is the volume growing when each edge is 2 in?

Related Rates with Derivatives · 6

Each side of a square grows at 5 in/s. How fast is the area growing when each side is 7 in?

Related Rates with Derivatives · 7

A stone dropped in a pond makes a circular ripple whose radius grows at 6 m/min. How fast is the area growing when the radius is 17 m?

Related Rates with Derivatives · 8

Each side of a square grows at 6 m/min. How fast is the perimeter growing when each side is 16 m?

Related Rates with Derivatives · 2

ANSWER

28

Related Rates with Derivatives · 1

ANSWER

4π

Related Rates with Derivatives · 4

ANSWER

28π

Related Rates with Derivatives · 3

ANSWER

120

Related Rates with Derivatives · 6

ANSWER

70

Related Rates with Derivatives · 5

ANSWER

12

Related Rates with Derivatives · 8

ANSWER

24

Related Rates with Derivatives · 7

ANSWER

204π

Related Rates with Derivatives · 9

The radius of a circle grows at 3 cm/s. How fast is the area growing when the radius is 17 cm?

Related Rates with Derivatives · 10

Each side of a square grows at 1 cm/s. How fast is the area growing when each side is 3 cm?

Related Rates with Derivatives · 11

Each edge of a cube grows at 3 in/s. How fast is the volume growing when each edge is 3 in?

Related Rates with Derivatives · 12

The water level in a cylindrical tank of radius 3 cm rises at 1 cm/s. How fast is water flowing in (the volume's rate of change)?

Related Rates with Derivatives · 13

A spherical balloon is inflated so its radius grows at 3 in/s. How fast is the volume growing when the radius is 8 in?

Related Rates with Derivatives · 14

The radius of a circle grows at 1 in/s. How fast is the area growing when the radius is 17 in?

Related Rates with Derivatives · 15

The water level in a cylindrical tank of radius 2 in rises at 4 in/s. How fast is water flowing in (the volume's rate of change)?

Related Rates with Derivatives · 16

A circular oil spill spreads so that its radius grows at 5 in/s. How fast is the area growing when the radius is 4 in?

Related Rates with Derivatives · 10

ANSWER

6

Related Rates with Derivatives · 9

ANSWER

102π

Related Rates with Derivatives · 12

ANSWER

9π

Related Rates with Derivatives · 11

ANSWER

81

Related Rates with Derivatives · 14

ANSWER

34π

Related Rates with Derivatives · 13

ANSWER

768π

Related Rates with Derivatives · 16

ANSWER

40π

Related Rates with Derivatives · 15

ANSWER

16π

Related Rates with Derivatives · 17

A circular oil spill spreads so that its radius grows at 6 m/min. How fast is the area growing when the radius is 11 m?

Related Rates with Derivatives · 18

A spherical balloon is inflated so its radius grows at 3 in/s. How fast is the volume growing when the radius is 3 in?

Related Rates with Derivatives · 19

Water is poured into a cylindrical tank of radius 6 m at 144π m^3/min. How fast is the water level rising?

Related Rates with Derivatives · 20

The area of a square grows at 22 cm^2/s. How fast is each side growing when the side is 3 cm?

Related Rates with Derivatives · 21

Each edge of a cube grows at 5 ft/min. How fast is the surface area growing when each edge is 2 ft?

Related Rates with Derivatives · 22

The area of a circle grows at 6π m^2/min. How fast is the radius growing when the radius is 9 m?

Related Rates with Derivatives · 23

The area of a circle grows at 6π m^2/min. How fast is the radius growing when the radius is 2 m?

Related Rates with Derivatives · 24

The area of a circle grows at 6π in^2/s. How fast is the radius growing when the radius is 5 in?

Related Rates with Derivatives · 18

ANSWER

$$108\pi$$

Related Rates with Derivatives · 17

ANSWER

$$132\pi$$

Related Rates with Derivatives · 20

ANSWER

$$\frac{11}{3}$$

Related Rates with Derivatives · 19

ANSWER

$$4$$

Related Rates with Derivatives · 22

ANSWER

$$\frac{1}{3}$$

Related Rates with Derivatives · 21

ANSWER

$$120$$

Related Rates with Derivatives · 24

ANSWER

$$\frac{3}{5}$$

Related Rates with Derivatives · 23

ANSWER

$$\frac{3}{2}$$