Related Rates with Derivatives · 1

The radius of a circle grows at 5 cm/s. How fast is the area growing when the radius is 4 cm?

Related Rates with Derivatives · 2

A spherical balloon is inflated so its radius grows at 3 in/s. How fast is the volume growing when the radius is 2 in?

Related Rates with Derivatives · 3

Water is poured into a cylindrical tank of radius 5 in at 75π in^3/s. How fast is the water level rising?

Related Rates with Derivatives · 4

The area of a square grows at 24 cm^2/s. How fast is each side growing when the side is 12 cm?

Related Rates with Derivatives · 5

Each edge of a cube grows at 2 ft/min. How fast is the surface area growing when each edge is 4 ft?

Related Rates with Derivatives · 6

The area of a circle grows at 16π ft^2/min. How fast is the radius growing when the radius is 2 ft?

Related Rates with Derivatives · 7

The area of a circle grows at 18π in^2/s. How fast is the radius growing when the radius is 8 in?

Related Rates with Derivatives · 8

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 16 m?

Related Rates with Derivatives · 2

ANSWER

48π

Related Rates with Derivatives · 1

ANSWER

40π

Related Rates with Derivatives · 4

ANSWER

1

Related Rates with Derivatives · 3

ANSWER

3

Related Rates with Derivatives · 6

ANSWER

4

Related Rates with Derivatives · 5

ANSWER

96

Related Rates with Derivatives · 8

ANSWER

192π

Related Rates with Derivatives · 7

ANSWER

$$\frac{9}{8}$$

Related Rates with Derivatives · 9

A 15 ft ladder leans against a wall. Its bottom slides away from the wall at 3 ft/s. Find dy/dt, the rate the height y of the top is changing, when the bottom is 12 ft from the wall.

Related Rates with Derivatives · 10

The area of a circle grows at 22π in²/s. How fast is the radius growing when the radius is 2 in?

Related Rates with Derivatives · 11

Water is poured into a cylindrical tank of radius 6 m at 180π m³/min. How fast is the water level rising?

Related Rates with Derivatives · 12

Air is pumped into a spherical balloon at 44π m³/min. How fast is the radius growing when the radius is 4 m?

Related Rates with Derivatives · 13

A 17 ft ladder leans against a wall. Its top slides down the wall at 4 ft/s. How fast is the bottom moving away from the wall when the top is 8 ft above the ground?

Related Rates with Derivatives · 14

Each edge of a cube grows at 3 in/s. How fast is the volume growing when each edge is 8 in?

Related Rates with Derivatives · 15

Water is poured into a cylindrical tank of radius 3 m at 18π m³/min. How fast is the water level rising?

Related Rates with Derivatives · 16

Air is pumped into a spherical balloon at 40π m³/min. How fast is the radius growing when the radius is 2 m?

Related Rates with Derivatives · 10

ANSWER

$$\frac{11}{2}$$

Related Rates with Derivatives · 9

ANSWER

$$-4$$

Related Rates with Derivatives · 12

ANSWER

$$\frac{11}{16}$$

Related Rates with Derivatives · 11

ANSWER

$$5$$

Related Rates with Derivatives · 14

ANSWER

$$576$$

Related Rates with Derivatives · 13

ANSWER

$$\frac{32}{15}$$

Related Rates with Derivatives · 16

ANSWER

$$\frac{5}{2}$$

Related Rates with Derivatives · 15

ANSWER

$$2$$

Related Rates with Derivatives · 17

A 13 ft ladder leans against a wall. Its bottom slides away from the wall at 4 ft/s. Find dy/dt, the rate the height y of the top is changing, when the bottom is 5 ft from the wall.

Related Rates with Derivatives · 18

The area of a circle grows at 16π ft²/min. How fast is the radius growing when the radius is 4 ft?

Related Rates with Derivatives · 19

Water is poured into a cylindrical tank of radius 6 cm at 180π cm³/s. How fast is the water level rising?

Related Rates with Derivatives · 20

Air is pumped into a spherical balloon at 48π m³/min. How fast is the radius growing when the radius is 3 m?

Related Rates with Derivatives · 21

A 17 ft ladder leans against a wall. Its top slides down the wall at 1 ft/s. How fast is the bottom moving away from the wall when the top is 15 ft above the ground?

Related Rates with Derivatives · 22

Each edge of a cube grows at 2 in/s. How fast is the volume growing when each edge is 7 in?

Related Rates with Derivatives · 23

A 13 ft ladder leans against a wall. Its bottom slides away from the wall at 3 ft/s. Find dy/dt, the rate the height y of the top is changing, when the bottom is 12 ft from the wall.

Related Rates with Derivatives · 24

A 15 ft ladder leans against a wall. Its top slides down the wall at 1 ft/s. How fast is the bottom moving away from the wall when the top is 9 ft above the ground?

Related Rates with Derivatives · 18

ANSWER

$$2$$

Related Rates with Derivatives · 17

ANSWER

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

Related Rates with Derivatives · 20

ANSWER

$$\frac{4}{3}$$

Related Rates with Derivatives · 19

ANSWER

$$5$$

Related Rates with Derivatives · 22

ANSWER

$$294$$

Related Rates with Derivatives · 21

ANSWER

$$\frac{15}{8}$$

Related Rates with Derivatives · 24

ANSWER

$$\frac{3}{4}$$

Related Rates with Derivatives · 23

ANSWER

$$\frac{36}{-5}$$