



Introduction to Related Rates

$$V = \frac{\pi}{3} r^2 h$$

Let x and y be differentiable functions of t

If $y = x^3 + 5$, find dy/dt when $x = 2$ and $dx/dt = 4$.

Let x and y be differentiable functions of t

If $y = x^2 - 3x$, find dy/dt when $x = 5$ and $dx/dt = -2$.

Let x and y be differentiable functions of t

If $x^2 + y^2 = 16$, find dy/dt when $x = 4$, $y = 2$ and $dx/dt = 5$

The **radius** of a circle is increasing at a **rate** of **4 feet per second**. Find the **rate of change** of the **area** of the circle when the **radius** is **6 feet** and when the **radius** is **12 feet**.

The **edge** of a cube is increasing at a **rate** of **6 feet per second**. Find the **rate of change** of the **volume** of the cube when each **edge** is **4 feet** and when each **edge** is **8 feet**.