Parametric Equations

Cartesian Equation: Eliminate t

$$x = 2t \quad y = t^2$$

$$t = \frac{x}{2}$$

$$y = \left(\frac{x}{2}\right)^2$$

Differentiating: Differentiate both separately

$$\frac{dy}{dx} = \frac{\frac{dy}{dt}}{\frac{dx}{dt}}$$

Integrating: We can change to t

$$\int y\,dx = \int y\frac{dx}{dt}\,dt$$

remember to change the limits