

Solutions to Differential Equations

Find the general solution to the differential equation.

(1) Solve for the differential (dy).

(2) Anti-derive both sides of the equation.

Example 1:

Find the general solution to $\frac{dy}{dx} = 2x$.

Example 2:

Find the general solution to $\frac{dy}{dx} = \cos x e^{\sin x}$.

Example 3:

Find the general solution to $\frac{dy}{dt} = \frac{1}{1-2t}$.

Particular Solutions to Differential Equations

Find the particular solution to the differential equation (*or* Solve the initial value problem explicitly)

- (1) Solve for the differential (dy).
- (2) Anti-derive both sides of the equation.
- (3) Sub in given values to solve for C.
- (4) Write solution with particular value of C.

Example 1:

Find the particular solution to $\frac{dy}{dx} = 2x$ at $(1,3)$.

Example 2:

Solve the differential equation $\frac{dy}{dx} = \cos x - 3x^2$ with the initial value of $y = 3$ when $x = 0$.

Example 3:

Find the solution to $\frac{dA}{dt} = \cos t \sin t$ for $A = \frac{3}{2}$ for $t = \frac{\pi}{2}$.