

EJERCICIOS DE ECUACIONES DIFERENCIALES

1 Resolver $y' = x$

Solución

$y'(x) = x$
first-order linear ordinary
differential equation

$$-x dx + dy = 0$$

$$y(x) = c_1 + \frac{x^2}{2}$$

Solución
general

$$y' = x$$

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

$$\int dy = \int x dx$$

$$y = \frac{x^2}{2} + C$$

$$j \quad \frac{dy}{dx} = y'$$

$$\int dy = y$$

$$\int x^1 dx = \frac{x^2}{2}$$

2 Resolver $y' = 4x$

Solución

$y'(x) = 4x$
first-order linear ordinary
differential equation

$$-4x dx + dy = 0$$

$$y(x) = c_1 + 2x^2$$

$$y' = 4x$$

$$\frac{dy}{dx} = 4x$$

$$\int dy = \int 4x^1 dx \Rightarrow y = 4 \frac{x^2}{2} + C$$

3 Resolver $y' = x^2$

Solución

$y'(x) = x^2$
first-order linear ordinary
differential equation

$$-x^2 dx + dy = 0$$

$$y(x) = c_1 + \frac{x^3}{3}$$

$$y' = x^2$$

$$\frac{dy}{dx} = x^2$$

$$\int dy = \int x^2 dx$$

$$y = \frac{x^3}{3} + C$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

4 Resolver $y' = -3x^2$

Solución

$y'(x) = -3x^2$
first-order linear ordinary
differential equation

$$3x^2 dx + dy = 0$$

$$y(x) = c_1 - x^3$$

$$y' = -3x^2$$

$$\frac{dy}{dx} = -3x^2$$

$$\int dy = \int -3x^2 dx$$

$$y = -3 \int x^2 dx \Rightarrow y = -3 \frac{x^3}{3} + C$$

RESOLVER Y REENVIAR

1 Resolver $y' = -x$

Solución

2 Resolver $y' = -3x$

Solución

3 Resolver $y' = -x^2$

Solución

4 Resolver $y' = 7x^3$

Solución