

Extra Separable Differential Equations

Directions: Solve each separable differential equation and state the interval of validity.

1. $\frac{dy}{dx} = -2xy^2$ and $y = \frac{1}{4}$ when $x = 1$

2. $\frac{dy}{dx} = (\cos x)e^{y+\sin x}$ and $y = 0$ when $x = 0$

3. $\frac{dy}{dx} = (2x + 1)(y + 1)$ and $y(-1) = 1$

4. $\frac{dy}{dx} = 4xy^2$ and $y(0) = 1$

5. $\frac{dy}{dx} = \frac{y^2}{x}$ and $y(1) = \frac{1}{3}$