

Separable Equations

Solutions should show all of your work, not just a single final answer.

1. Find the solution to $\frac{dy}{dx} = e^x e^y$ where $y(0) = 1$.
2. Solve $\frac{dy}{dx} = x(y^2 - 1)$ with $y(0) = 2$.
3. We seek the general solution of $\frac{dy}{dx} = x + y$.
 - (a) Why isn't this a separable differential equation?
 - (b) Letting $u = x + y$, find a differential equation for du/dx that is separable.
 - (c) Solve the differential equation in part (b) and then give the general solution to $\frac{dy}{dx} = x + y$.
4. T/F (with justification)
The differential equation $\frac{dy}{dx} = yx + y$ is separable.