M1B/Schoenbrun Section 7.9 Separable Variables

1) Solve the differential equation $\frac{dy}{dx} = ky$ with initial conditions

$y(0) = 50$ and $y(10) = 25$

2) Show that the solution satisfies the differential equation at the initial conditions listed

$y'' - 4y = 0$

$y = \frac{1}{4}\left(e^{2x} - e^{-2x}\right)$

At $y(0) = 0$ and $y'(0) = 1$

Solve the differential equations by separating variables

3) $\frac{dy}{dx} = xy^2$

4) $\frac{dy}{dx} = xe^{-y}$