PRACTICAL WEEK 3
First-Order ODEs: Separation of Variables

Problem 1

Solve the following differential equations by separation of variables:

1. $\frac{dy}{dx} = \sin(5x)$,
2. $\frac{dy}{dx} = e^{(3x+2y)}$,
3. $\frac{dy}{dx} = (x+1)^2$.
4. $\frac{dy}{dx} = y^2 - 4$
5. $\frac{dy}{dx} = \frac{y}{1+x}$

Problem 2

Solve the initial-value problem $y' + e^x y = 0$, $y(0) = 1$.

Problem 3

Solve the following initial value problem

$$\frac{dy}{dx} = e^{-x^2}, y(2) = 10.$$