

Math 2233
Homework Set 2

1. Solve the following differential equation using Separation of Variables.

$$\frac{dy}{dx} = xe^y$$

2. Solve the following differential equation using Separation of Variables.

$$\frac{dx}{dt} = txe^{t^2}$$

3. Solve the following differential equation using Separation of Variables.

$$x^2y' + e^y = 0$$

4. Solve the following differential equation using Separation of Variables.

$$yy' = e^x$$

5. Solve

$$y' + 3y = x + e^{-2x} \quad .$$

6. Solve

$$y' - y = 2e^x \quad .$$

7. Solve

$$xy' + 2y = \sin(x) \quad ; \quad x > 0 \quad .$$

8. Solve the following initial value problem.

$$y' - y = 2xe^{2x} \quad ; \quad y(1) = 0 \quad .$$

9. Solve the following initial value problem.

$$y' + \frac{2}{x}y = \frac{\cos(x)}{x^2} \quad ; \quad y(\pi) = 0$$