

Homework #2

Math 527, UNH spring 2015

Due Tuesday, Feb. 3 in recitation.

Find the general solution of the given differential equation and give the largest interval over which the solution is defined.

$$1: \frac{dy}{dx} + y = e^{3x}$$

$$2: \frac{dy}{dx} + 2xy = x^3$$

$$3: x \frac{dy}{dx} - y = x^2 \sin x$$

$$4: \cos x \frac{dy}{dx} + (\sin x)y = 1$$

Solve the initial value problem and give the largest interval over which the solution is defined.

$$5: \frac{dy}{dx} = 2x - 3y, \quad y(0) = \frac{1}{3}$$

$$6: t \frac{dy}{dt} + y = e^t, \quad y(1) = 2$$

$$7: (x+1) \frac{dy}{dx} + y = \ln x, \quad y(1) = 10$$

$$8: x(x+1) \frac{dy}{dx} + xy = 1, \quad y(e) = 1$$