Worksheet 6

Spring 2016

MATH 222, Week 6: 3.1, 3.2, 3.3, 3.5

Name: _____

You aren't necessarily expected to finish the entire worksheet in discussion. There are a lot of problems to supplement your homework and general problem bank for studying.

Problem 1. Find a solution to the initial value problem:

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

With initial value $y(0) = 0$.

Problem 2. Find a solution to the initial value problem:

$$\frac{dy}{dx} = y\sqrt{y^2 - 1}\cos(x)$$

With initial value $y(0) = 1$.

Problem 3. Find the general solution to the differential equation

$$\frac{dy}{dx} = x^2 + y^2 x^2$$

Problem 4. Find the general solution to the differential equation (for $x \neq 0$):

$$x\frac{dy}{dx} = -y + x$$

Problem 5. Find the general solution to the differential equation

$$\frac{1}{2x}\frac{dy}{dx} = y + e^{x^2}$$

Problem 6. Find a solution to the initial value problem

$$\cos(x)\frac{dy}{dx} = 1 - \sin(x)y$$

With initial value $y(0) = 1$.