Math 2208: Ordinary Differential Equations

Assignment 0 - Introduction

Spring 2020	Subhadip Chowdhury	Due: Jan 27

Getting to Know You!

Name:_____

Nickname or Preferred Name:_____ **Preferred Pronoun:**_____

- **Describe your prior experiences, if any, with differential equations.**

- **Why are you interested in taking this course?**

- **Do you own a PC or a Laptop Computer?**_____

- **If you own a laptop computer, would you be comfortable bringing it to class for certain lectures?**

- **Do you have any concern about this course?**

- **Anything else you would like me to know about you. Please note that anything you write here will be completely confidential.**

Calculus Review Exercises

Complete the following problems. They will touch on some of the prerequisite topics from Calculus I-III that we will encounter in this course. Additional prerequisite exercises will appear on future homework as needed.

Do NOT write the solutions on this paper. Submit your solutions with appropriate "Assignment Cover Sheet".

■ **Question 1.**

Compute the derivatives of the following functions, where $u(x)$ is a differentiable function of x.

- a $e^{u(2x)}$

- b $\sin(2u(x))$

- c $e^{4x}\cos(3x)$

■ **Question 3.**

Do you recall important integration topics such as u–substitution, integration by parts, partial fractions, and improper integrals? Compute the following integrals, showing all your work (do not use wolfram alpha).

- a $\displaystyle\int e^x \sin(3x)\,dx$

- b $\displaystyle\int \frac{dx}{x(x+1)}$

- c $\displaystyle\int e^{x^2} 3x\,dx$

- d $\displaystyle\int_1^\infty \frac{1}{x^2}\,dx$

- e $\displaystyle\int_1^\infty \frac{1}{x}\,dx$

■ **Question 4.**

Let $f(x,y) = 3x^2 + 4y + xy + \sin(x)\cos(y)$. Compute the partial derivatives $\frac{\partial f}{\partial x}$ and $\frac{\partial f}{\partial y}$.