Spring 2021 Math 20D Lecture B Homework #2
Due Sunday, 11:59pm, April 18th

Submit this homework through Gradescope, check the course website on how to submit homework.

Topics covered: section 2.5, 4.2-4.3

1. Solve $(y - x^2 \cos x)dx - x\,dy = 0$.

2. Solve $(2xy)dx + (y^2 - 3x^2)dy = 0$.

3. Solve the initial value problem

$$y'' + 4y' + 6y = 0, \quad y(0) = 1, y'(0) = 0.$$

4. Solve the initial value problem

$$9y'' + 6y' + y = 0, \quad y(0) = 6, y'(0) = -1$$

5. Solve the initial value problem

$$y'' + y' - 2y = 0, \quad y(0) = \alpha, y'(0) = 1.$$

And find the value of α so that the solution goes to 0 when $x \to +\infty$.

Note: Due to the number of students in this class, a subset of the questions will be used to grade this assignment. This subset will be determined after all of the assignments have been submitted.