MATH.2360 Engineering Differential Equations
Take-Home Part of Exam # 2
Fall 2017

Due date: Monday, October 30. (No extensions.)

Problem #1 (10 points)

Consider the following differential equation:

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

a. Use the MATLAB routine *ode45* to generate approximate solutions to this differential equation over the interval $-2 \leq x \leq 2$ first with initial condition $y(-2) = 0$ and then with initial condition $y(-2) = 1$.

b. Graph the two computed solutions on the same set of axes using the following formatting instructions. **DO NOT USE THE plotyy COMMAND**

- Create a title that contains your name and describes the graph (something like "Numerical Solutions of dy/dx = cos(x^2+y^2) by I. M. Smart")
- Be sure to label your axes. The only variables in the problem are x and y. Don't use other letters in your axis labels. (You will have to use other variable names in your MATLAB code, but don't use those names in your axis labels.)

Please turn in your graph from part b and your MATLAB code, including the commands you used and the m file defining the d.e.

Please email your results to me at `stephen_pennell@uml.edu`