

92.236 Engineering Differential Equations Take-Home Part of Exam # 2
Fall 2016

Due date: Monday, October 24. (No extensions.)

Problem #1 (10 points)

Consider the following differential equation:

$$\frac{dy}{dx} = \cos(xy^2)$$

- a. Use the MATLAB routine `ode45` to generate approximate solutions to this differential equation over the interval $-1 \leq x \leq 3$ first with initial condition $y(-1) = 0$ and then with initial condition $y(-1) = 1$.
- b. Graph the two computed solutions on the same set of axes using the following formatting instructions.
 - Create a title that contains your name and describes the graph (something like “Numerical Solutions of $dy/dx = \cos(xy^2)$ 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.

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