92.236 Engineering Differential Equations Take-Home Part of Exam # 2
Spring 2015

Due date: Friday, March 13. (No extensions.)

Problem #1 (10 points)

Consider the following differential equation:

$$\frac{dy}{dx} = y^2 - x^3$$

a. Use the MATLAB routine *ode45* to generate approximate solutions to this differential equation over the interval $0 \leq x \leq 3$ first with initial condition $y(0) = -1$ and then with initial condition $y(0) = -2$.

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 = y^2-x^3) 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`