Math 20750
Spring, 2016

Assignment 2, due January 22

On this and future assignments you will work on the problems from *Differential Equations with MATLAB®* in a group of two or three students. Your group should turn in **only one** assignment, with the names of all members of the group on it. Sign up for a group by Monday, January 18.

Download the java applets **dfield** and **pplane** from http://math.rice.edu/ dfield/dfpp.html

Read §§1.1, 2.1, 2.2, 2.4, 2.3 and 2.5 in Polking, Boggess and Arnold in that order.

Do:
§2.1 #2,4,6,7,8,12,15,17,22,26
§2.2 #10,18,23,24,32,33,34,35,41 The model in #23 should be $N = N_0 e^{-\lambda t}$.

Use **dfield** as your numerical solver. Read the cursor position (which you can see in the lower left corner)to obtain numerical values.

Read chapters 5-7 in *Differential Equations with MATLAB®*.

Do:
Problem Set B #1,8

Use a separate m-file for each problem. Staple the published solutions together in order. Make sure the names of all members of your MATLAB group are on MATLAB assignment before turning it in.

Hints for Problem Set B #8

MATLAB gives you an implicit solution, which you want to write in the form $f(t, y) = c$. The implicit solution will be something of the form

RootOf(g(z,t),z)

where g is some function of z and t. An example (not exactly what you'll get) would be:

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RootOf(z^3+5*z^2-9*z+2013 - 29*C5+t^(94),z)
```

so y satisfies the equation $y^3 + 5y^2 - 9y + 2013 - 29\text{C5} + t^{94} = 0$ where C5 is some constant.