Homework 2 - Math 133
Due Thursday, Jan. 29

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Office hours: Tuesday 4pm-5:30pm.

www.math.duke.edu/~mauro/teaching.html

I prefer homework written in pen rather than pencil. The handwriting and organization of your work on the page should be clear. Include appropriate explanations for what you are doing in your calculations and why, and what conclusions you draw or observations you make.

The homework should include a printout of the Matlab code you used and of the Matlab output (including figures). Also send me a copy of the Matlab code via e-mail: if you have multiple files, compress them into a unique zip file. Name the file as FamilyName_FirstInitial_Homework_xx.zip, where xx is the homework number. This will apply to all the future homework as well. The subject line of the e-mail should be "Math 133 homework".

(1) Problem 6 on page 38. When the program asks you to select a profile, say "1" for $f1$. Sketch characteristics starting at $x_0 = 0, 1, 2$ until $t = 4$, and follow the instructions. By looking at the graphs, estimate the first time of a vertical tangent or shock, within .1, using "zoom on" and "grid on" (it is earlier than predicted by your sketch). Can you explain the first time you observed? You can use the program "shocks" as well as "mtc". The two programs use the same $f1$, $f2$ etc. The difference is that "shock" is correct after the shock forms, and "mtc" is not.

(2) Problem 2 on page 61.

(3) Problem 4,10 on pages 62-64 (see instructions on Matlab scripts just above problem 4).