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# Differential Equations

Math 341 Fall 2009  
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Fowler 110 MWF 2:30pm - 3:25pm  
<http://faculty.oxy.edu/ron/math/341/09/>

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## Week 10

### Monday November 2 : *Worksheet 20*

**Second-Order Linear ODEs.** The joys of harmonic motion! We shall more closely examine the standard second order constant-coefficient ODE  $y'' + ay' + by = 0$  now that we have completed the analysis of the analogous first order system of 2 linear ODEs.

Reading:

Blanchard, 3.6

Homework #20:

Blanchard, Section 3.6: 4, 5, 16, 33, 38.

Quiz:

Reading Quiz #3 on Sections 3.1 to 3.5.

### Wednesday November 4 : *Worksheet 21*

**Trace-Determinant Plane.** We shall summarize all the possible equilibria one can get with a 2x2 linear system of ODEs into one big picture!

Reading:

Blanchard, Section 3.7

Homework #21:

Blanchard, Section 3.7: 1, 6.

### Friday November 6 : *Worksheet 22*

**Linearization.** We shall begin our analysis of non-linear systems using a technique called linearization which transforms the behavior of nonlinear systems of ODEs back into our now familiar analysis of linear systems of ODEs. Remember your Taylor Aproximations!

Reading:

Blanchard, 5.1

Homework #22:

Blanchard, Section 5.1: 3, 4, 5, 18, 21.