Differential Equations

Week 10

Monday November 4 : *Worksheet 20*

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, 2*, 6.

Blanchard, Chapter 3 Review: 3,4,6,10,13, 20*.

Wednesday November 6 : *Worksheet 21*

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, 20*.

Quiz:

Reading Quiz #3 on Sections 3.1, 3.2, 3.3, 3.4, 3.5 and 3.7.

Friday November 8 : *Worksheet 22*

Hamiltonian Systems. We shall continue our analysis of non-linear systems by introducing the concept of a Hamiltonian.

Reading:

Blanchard, Section 5.3

Homework #24:

Blanchard, Section 5.3: 2, 9, 12, 13, 14, 18*.

Quiz:

Take Home Quiz #8