Differential Equations

Week 6

Monday October 5 : *Worksheet 11*

Geometry of Systems of ODEs. We will be exposed to the beautiful pictures which can result when oe does quantitative analysis on systems of ODEs (phase portraits).

Reading:

Blanchard, Section 2.1

Homework #11:

Blanchard, Section 2.1: 1, 2, 3, 5, 7, 10.

Wednesday October 7 : *Worksheet 12*

Analytical Methods for Special Systems. We will learn an analytical technique to obtain solutions of specific classes of linear systems (decoupled and partially decoupled).

Reading:

Blanchard, Section 2.2

Homework #12:

Blanchard, Section 2.2: 7, 8, 10, 24, 25.

Friday October 9 : *Worksheet 13*

Euler's Method for Systems. It's baaaaaaack! We will look at how to implement the numerical technique Euler's Method when one has a linear system of ODEs and initial conditions $\dfrac{d\vec{x}}{dt} = \vec{F}(\vec{x}), \quad \vec{x}(0) = \vec{x}_0$.

Reading:

Blanchard, Section 2.4

Homework #13:

Blanchard, Section 2.3: 3, 4, 7, 11.

Blanchard, Section 2.4: 2, 4.

Quiz #3.