

*Worksheet 30***TITLE** Review for Final Exam**CURRENT READING** Blanchard, Chapter 1, 2 (NOT 2.7 or 2.8), 3 (NOT 3.8), Chapter 5 (5.1, 5.3, 5.4), Chapter (NOT 6.6)**SUMMARY**

We will review the topics of the last section of the course which the Exam will be on.

Here are the titles of the worksheets we have had in the second section of the course.

- (29) Laplace Transforms and Convolution
- (28) Laplace Trasforms and 2nd Order Linear ODEs
- (27) Laplace Transforms and Discontinuous Functions
- (26) Introduction to Laplace Transforms
- (25) REVIEW FOR EXAM 2
- (24) Analysis of Nonlinear Systems: Gradient Systems
- (23) Analysis of Nonlinear Systems: Hamiltonian Systems
- (22) Analysis of Quasi-Linear Systems: Linearization
- (21) The Big Picture Of Linear Systems: The Trace-Determinant Plane
- (20) Linear Systems with Repeated Eigenvalues
- (19) Linear Systems with Complex Eigenvalues
- (18) Linear Systems with Real Eigenvalues
- (17) Straight Line Solutions of Linear Systems
- (16) Introduction to Linear Systems
- (15) REVIEW FOR EXAM 1
- (14) Existence and Uniqueness for Systems of 1st order ODEs
- (13) Euler's Method for Systems of 1st Order ODEs
- (12) Solving (Partially Decoupled & Decoupled) Systems of 1st Order ODEs
- (11) The Geometry of Systems of 1st Order ODEs
- (10) Introduction to Systems of 1st Order ODEs
- (9) Integrating Factors for Solving Linear 1st Order ODEs
- (8) (Solving Homogeneous and Nonhomogeneous) Linear 1st Order ODEs
- (7) Bifurcations
- (6) Phase Lines and Classification of Equilibria
- (5) Existence and Uniqueness Theorem
- (4) Euler's Method
- (3) Slope Fields
- (2) Separation of Variables Technique for Solving ODEs
- (1) Introduction to Differential Equations

Next to each of them topics above place a letter.

A - I completely understand this topic and am confident about answering questions on it

B - I understand this topic mostly but am not confident about answering questions on it

C - I barely understand this topic and could only answer a basic question about it

D - I don't know anything about this topic at all.

The Quizzes in this class have been:

Quiz 11 *Advanced Laplace Transforms*

Quiz 10 *Introduction to Laplace Transforms*

Quiz 9 *Classifying Equilibria of Quasi-Linear Systems*

BONUS QUIZ 2 *Visualizing Solutions of Linear Systems of ODEs*

Quiz 8 *Bifurcations in Linear Systems of ODEs*

Quiz 7 *2D Linear Systems of ODEs*

Quiz 6 *Review of Topics in Chapter 1 and 2*

Quiz 5 *Solutions of Linear Differential Equations* [TRUE/FALSE]

Quiz 4 *Bifurcations Practice*

Quiz 3 *Existence and Uniqueness Theorem*

Quiz 2 *The Logistic Population Model*

BONUS QUIZ 1 *Singular Solutions*

Quiz 1 *Introduction to Differential Equations*

Exercise

Write down a topic that you are confident you understand completely and share your topic with your nearest neighbor. Explain your topics to each other.

GROUPWORK

Write down a topic that you do NOT understand very well and share your topic with members of your group and work together to explain it to each other.