MA262 Summer 2008

Final Exam Topic List

Chapter 1

◈ Solving first-order differential equations
(1) Separation of variables
(2) Integrating factors
(3) Exactness

Chapter 2

◈ Matrix multiplication

Chapter 3

◈ Properties of the determinant
◈ The adjoint of a matrix

Chapter 4

◈ Subspace
◈ Row space and column space
◈ Linearly independent/dependent

Chapter 5

◈ Eigenvalues, Eigenvectors, and Eigenspace

Chapter 6

◈ Annihilators $A(D)$
◈ Linear differential operator L
◈ Solving constant-coefficient homogeneous linear differential equations
◈ Oscillations of a mechanical system
◈ Variation-of-parameters method to find the particular solution

Chapter 7

◈ Solving first-order linear system
◈ Converting second-order linear system into first-order linear system
◈ Linearly independent/dependent for vector functions
◈ Solving vector differential equations: nondefective coefficient matrix
◈ Variation-of-parameters method for solving $\mathbf{x}' = A\mathbf{x} + \mathbf{b}$