

[MATH2605] Exam 2: Topics

Exam date and time: 2:05pm-3pm, 03/15/2007 (Wednesday)

Chapter 2, Section 1 and 2

Everything in this chapter.

Chapter 5, Section 1

Everything in this section.

Chapter 5, Section 2,3, and 4

1. Conversion from an ODE to a set of first order ODE, and its solution.
2. Matrix exponentials of diagonalizable and non-diagonalizable matrices.
3. Equilibrium points of nonlinear ODE.
4. Stabilities of linear and nonlinear ODE's.
5. Numerical solutions to ODE's: The forward Euler and the midpoint methods.

Chapter 5, Section 5, and 6

1. Rotation matrices about x, y and z -axes.
2. Rotation matrices between different coordinate frames.
3. Properties of rotation matrices.
4. Eigenvalues and eigenvectors of the rotation matrices. The axis of rotation and the angle of rotation.
5. Construction of the rotation matrix from the axis of rotation and the angle of rotation.