

Structure of MATH2010 Examination, November, 2005

Note: The independent variable in all differential equations is time t .

1. Homogeneous and nonhomogeneous first order systems of differential equations.
2. Finding Laplace transforms, inverse transforms and applications to an initial value problem (two questions).
3. (a) More on Laplace transforms.
(b) Input-output system and transfer functions.
4. (a) Classify the equilibrium of a first order linear system and sketch trajectories in the phase plane.
(b) Find the critical points of a nonlinear system and classify them by linearization.