MAP2302 Differential Equations
Mid Term Topic Outline

1. Determine the order of a given D.E.
2. Determine whether a given D.E. is linear or not
3. Determine whether a given D.E. is homogeneous or non-homogeneous
4. Identify the type of first order D.E. a given equation is [Separable, Linear, Exact, Homogeneous, etc.]
5. Solve a given first order D.E. based on the type it is determined to be.

6. Identify second order D.E.
7. Find the Characteristic equation associated with a given D.E.
8. Find the roots of the characterisitic equation.
9. Find the Complementary solution to a given D.E.; this includes with or without initial conditions
10. Find the Wronskian of a given D.E.; determine whether the associated solutions from the complementary solution are linearly independent or not.
11. Use the method of Undetermined Coefficients or Variation of Parameters to find the complementary solution of a given D.E.
12. Find the Particular solution associated with a non-homogeneous D.E.; this includes with or without initial conditions.
13. Give the general solution of a given D.E.; with or without initial conditions.
14. Determine if a given value is an eigenvalue for a given D.E.
15. Find the eigenvalues and associated eigenfunctions for a given D.E.

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