Chapter 1: First Order ODE

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| **Separable Equations** Consider change of variables   |  |  | | --- | --- | |  |  | | **First Order Linear Equation** | **Bernoulli Equation** \*solve z’ with first order linear equation after that |
| **Model Of Cooling** | **Radioactive Decay** |

Chapter 2: Second Order ODE With Constant Coefficients

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| --- | --- |
| **Homogenous Equation** | **Non – Homogeneous Equation**   1. Find Homogeneous Equation 🡪 2. Find Particular Solution 🡪 3. General Solution = |

|  |  |
| --- | --- |
| **Method of Undetermined Coefficients**  Ensure that no term in a particular solution is a solution of the corresponding ODE.  Consider use of this to find real and imaginary part of solution to work with exponential | **Method of Variation Of Parameters**  =  Let |
| **Working with Complex Numbers**   1. Let , then find y where then find y’, y’’ 2. Convert y to the real or imaginary form depending on R(x) |

Chapter 3 - Oscillations

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| --- | --- |
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Chapter 3: Population

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| --- | --- |
| Malthus Model | Logistic Growth Model |

Harvesting Model with constant harvest E

Diagram, engineering drawing

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**\*Note that death rate = s, death rate per capita = sN**

Laplace Transform Concepts

A picture containing diagram

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Unit Step Function u(t-a) where a represents the start of the step

Dirac Delta

Timeline, box and whisker chart

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Dirac Delta – Sudden Spike to infinity

Text

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Laplace Transform Table

Table

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Other Interesting Laplace Transforms

Chapter 5 - Partial Differential Equations

Assume:

Perform separation of variables, each side is equal to the same constant and integrate.

Text, letter

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Graphical user interface, text, application

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Ian’s Note

Graphical user interface, text

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