



Differential and Integral Calculus 1

MS-A0111

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Problem Sheet for Week 42 (B), 2021



NOTE¹

The due date is published on the course pages. Homework can be submitted only digitally. Instructions on labelling the “papers” can be found on the course pages.

1 Introductory Problems

INTRO 21 Find the complete solution.

$$\begin{cases} y'' + 4y' + 3y = 0, \\ y(3) = 1, \\ y'(3) = 0. \end{cases}$$

INTRO 22 Find the complete solution.

$$\begin{cases} y'' - 4y' + 5y = \sin x, \\ y(0) = 0, \\ y'(0) = -1. \end{cases}$$

2 Homework Problems

EXERCISE 21 Find the complete solution.

$$\begin{cases} y'' - 3y' + x^2 - 1 = 0, \\ y(0) = 1, \\ y'(0) = 0. \end{cases}$$

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EXERCISE 22 Solve for all $a, b \in \mathbb{R}$

$$y'' + a^2y = \sin bx.$$