Numbers, Sequences & Series

Lecture Notes, T1 2023

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Welcome

These are the Lecture Notes of **Numbers, Sequences & Series 400297** for T1 2023 at the University of Hull. I will follow these lecture notes during the course. If you have any question or find any typo, please email me at

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Up to date informations about the course and homework will be published on the course webpage

silviofanzon.com/blog/2023/NSS

A **pdf** version of the notes is available to download on the top-right.

References

We will study curves and surfaces in $\mathbb{R}^3$. I will follow mainly the textbook by Pressley [6]. Other references that inspired these notes are the books by do Carmo [2], O'Neill [5] and Bär [1].

I will assume some knowledge from Analysis and Linear Algebra. A good place to revise these topics are the books by Zorich [7, 8]. In addition, it can be helpful to plot curves and surfaces to aid visualization. I will do this with Python 3. I recommend installation through Anaconda or Miniconda. The actual coding can then be done through, for example, Jupyter Notebook. Good references for scientific Python programming are [3, 4].

> **!** You are not expected to purchase any of the above books. These lecture notes will cover 100% of the topics you are expected to known in order to excel in the final exam.

Part I

Numbers

1 Introduction

Part II

Sequences

2 Introduction

Part III

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References

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[2] M. P. do Carmo. *Differential Geometry of Curves and Surfaces*. Second Edition. Dover Books on Mathematics, 2017.

[3] R. Johansson. *Numerical Python. Scientific Computing and Data Science Applications with Numpy, SciPy and Matplotlib*. Second Edition. Apress, 2019.

[4] Q. Kong, T. Siauw, and A. Bayen. *Python Programming and Numerical Methods*. Academic Press, 2020.

[5] B. O'Neill. *Elementary Differential Geometry*. Second Edition. Academic Press, 2006.

[6] A. Pressley. *Elementary Differential Geometry*. Second Edition. Springer, 2010.

[7] V. A. Zorich. *Mathematical Analysis I*. Second Edition. Springer, 2015.

[8] V. A. Zorich. *Mathematical Analysis II*. Second Edition. Springer, 2016.