Data Science Math Skills

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Course Information

Data Science Math Skills by **Duke University** is a online course you can take on this site Coursera.

Motivation for Learning & Re-learning

A lot of graduate school students struggle with Data Science courses only because of their lack of knowledge and/or understanding of Mathematics for Data Science. The course gives an overview of Mathematical concepts you will encounter while learning Data Science.

Supplemental Notes and Videos

Here's how I make my notes:

My notes include videos from Khan Academy and other websites. The content's the same, and often a bit better due to lack of errors. The text are usually from the Coursera video transcripts.

I indicate **why** it is important to learn such concepts through **Further Reading** notes.

Sets and What They're Good For

Set Basics and Vocabulary

- Set Theory
- Set Theory Operations

Further Reading

> A set is the fundamental discrete structure on which all other discrete structures are built.

Those who studied Discrete Mathematics or read a book about it will probably just re-learn a lot from this course on Set Basics.

- Applications of Set Theory in Computer Science - A list of the most obvious applications of Set Theory.
- Discrete Mathematics and Its Applications - I read most of the book as a supplemental material for a Discrete Math course. The book clearly states why a set is the foundational structure in Computer Science.

Descartes Was Really Smart

Plotting Points

- The x-axis is going to be the set of all points x-y in the Cartesian plane, x-y in R2, such that their y coordinate is zero.
- We divide the Cartesian plane into four separate regions, and these we call **quadrants**.
- Coordinate plane: quadrants

Distance Formula

- Distance formula

$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Point-Slope Formula for Lines

- Point Slope Form

$y - b = m(x - a)$

Slope-Intercept Formula

- Slope Intercept Equation
- Intro to Slope Intercept Form

$y = mx + b$