
TENSORS

INTRODUCTION TO TENSORS AND TENSOR CALCULUS

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My set of notes based on the YouTube videos by egienchris

<https://www.youtube.com/channel/UCN8wTU1SAroLslWyf87E2pw>

Introduction to Tensors

<https://www.youtube.com/playlist?list=PLJHszsWbB6hrkmmq57lX>

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Chapter 1

Tensors

1.1 What is a tensor?

Here we will explore three different definitions of a tensor. Starting from the weakest to the most powerful.

1.1.1 A Multidimensional Array

A tensor can be seen a simple multidimensional array of numbers.

The first and most basic tensor is called a scalar which is an array with zero dimension, also called a rank zero tensor. Scalars are then just numbers. Examples include $1, 2, -1, \pi$

1.2 Change of Basis