Chapter 1

Introduction

- DiffGeo lectures by james cook

Chapter 2

Lecture 2

Definition 1 *Real space:*

$$\mathbb{R}^n \equiv \{(p^1, p^2, \ldots, p^n) : p^i \in \mathbb{R}\}$$

Definition 2 *Standard basis:*

$$(e_i)^j \equiv \delta_i^j = \begin{cases} 1 & i = j \\ 0 & otherwise \end{cases}$$

Definition 3 *Tangent space at point $Q \in \mathbb{R}^n$:*

$$T_Q\mathbb{R}^n \equiv \{q\} \times \mathbb{R}^n$$

Definition 4 *Tangent bundle:*

$$T\mathbb{R}^n \equiv \cup p \in \mathbb{R}^n T_p\mathbb{R}^n = \cup p \in \mathbb{R}^n \{p\} \times \mathbb{R}^n$$