name surname

Very Interesting and Elaborate Course Name

lecture notes
course book: “Extremely Cool and Deep Book” by Famous Author

24/09/2025

Contents

1. Chapter

Yes these are notes they are so useful

1.1. Introduction

Yes indeed so true aha i agre yes yes...

1.1.1. furthermore

Mmmh terribly interesting indeed $5 + 5 = 10$

def. 1: group

group is a set G together with a binary operation $\cdot : G \times G \to G$ such that:

1. $(a \cdot b) \cdot c = a \cdot (b \cdot c)$ forrr all $a, b, c \in G$ (associativity),
2. there exists an identity element $e \in G$ such that $e \cdot a = a \cdot e = a$ for all $a \in G$,
3. every $a \in G$ has an inverse a^{-1} such that $a \cdot a^{-1} = a^{-1} \cdot a = e$.

lemma 1: Uniqueness of the Identity

f e and e' are both identity elements in G, then $e = e'$.

theorem 1: Cancellation Law

n a group G, if $a \cdot b = a \cdot c$, then $b = c$.

proof!

Suppose $a \cdot b = a \cdot c$. Multiply both sides on the left by a^{-1}:

$$a^{-1} \cdot (a \cdot b) = a^{-1} \cdot (a \cdot c).$$

By associativity,

$$(a^{-1} \cdot a) \cdot b = (a^{-1} \cdot a) \cdot c.$$

Since $a^{-1} \cdot a = e$ (the identity), we get $e \cdot b = e \cdot c$, which simplifies to $b = c$.

stuff

This is the stuff.