

120A: Homework 2

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Since we have an extra grader for the course, almost all problems will be graded in detail. The book exercises are worth 60 percent, and the extra exercises are worth 40 percent.

1. EXERCISES FROM BOOK

We will check the following exercises from the book.

Section 3: 2, 4, 8, 19, 33

Section 4: 1, 3, 10, 17, 31, 34, 41

2. EXTRA EXERCISES

Exercise 1

- (a) Let S be the set of odd integers. Is S a group under addition? Explain.
- (b) Let S be the set of even integers. Is S a group under addition? Explain.

Exercise 2 (left axioms; tricky exercise):

Let G be a set with a binary operation $*$ such that the following properties hold:

- For all $x, y, z \in G$ one has $(x * y) * z = x * (y * z)$ (associative).
- There exists an $e \in G$ such that for all $x \in G$ one has $e * x = x$ (left identity).
- For every $x \in G$ there is an $x' \in G$ with $x' * x = e$ (left inverse).

Show that $(G, *)$ is a group.