

**120A: Homework 1**  
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1. COMPLETENESS

We will check the following exercises from the book for completeness.

**Section 1:** 7, 18, 24, 33, 36, 37.

**Section 2:** 7, 8, 17, 22, 24, 26, 31.

2. DETAILED

Please provide full details for the solutions to the problems below.

**Exercise 1:** Consider the set  $T$  of all convex subsets of  $\mathbf{R}^2$  (look up the definition of convex on Google). Is intersection a binary operation on  $T$ ? What about union?

**Exercise 2:**

Write down the table for  $\mathbf{Z}_5 = \{0, 1, 2, 3, 4\}$  with its addition  $+_5$ . Is the operation commutative?

**Exercise 3:**

Construct a binary operation on  $\{a, b, c\}$  which is not associative (you can write down the table and prove that it is not associative).