

## Exercises for week 2

**Problém 1.** Find an ideal in a commutative ring that is not principal.

**Problém 2.** Find at least ten units (elements associated to 1) in the domain  $\mathbb{Z}[\sqrt{2}]$ .

**Problém 3.** Show that every finite integral domain is a field.

**Problém 4.** What are the maximal ideals in  $\mathbb{Z}$ ? (Note:  $\mathbb{Z}$  itself is not a maximal ideal.)