LECTURE 1

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Contents

Rings

$\mathbb{Z}$, $+$: addition, $\cdot$ multiplication

$$a + (b + c) = (a + b) + c \text{ 0 - aditive identity} \tag{1}$$
$$(ab)c = a(bc) \tag{2}$$
$$a + b = b + a : \text{ multiplication doesn't have to be communtative} \tag{3}$$
$$(a + b)c = ac + bc : \text{ distributinos} \tag{4}$$

1_R- Multiplicative idenfity (if exists)
if there exists $1_R \in R$ then R is called unital or ring with unity.
If $ab = ba, \forall a, b \in R$ then R is a commutative ring