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0.1 The infinite cyclic group (Z)

0.1.1 The additive group of integers

0.1.2 Generating cyclic groups

We can generate a group with a single element, it is a cyclic group.

For example, we can define a group $G = \langle 1 \rangle$ which gives us the additive group of integers.

0.1.3 Infinite cyclic groups are isomorphic to the additive group of integers

More generally, any infinite cyclic group is isomorphic to the additive group of integers.

Consider the multiplicative group of $\langle i \rangle$.

This contains $\{1, -1, i, -i\}$.

This is also automorphic to the natural number and modulo addition group above.

We can define finite cyclic groups of size n using the generating element $z^{\frac{1}{n}}$. This is isomorphic to the general cyclic group C_n , and to Z/nZ .

0.1.4 Abelian cyclic groups

Cyclic groups are abelian.