

# Homework 1

## Maths Introduction

### Some modular arithmetic

1. Working with the following set of Integers  $S = \{0,1,2,3,4,5,6\}$

What is

a)  $4 + 4$

b)  $3 \times 5$

c) what is the inverse of 3 ?

2. For  $S = \{0,1,2,3,4,5,6\}$

Can we consider 'S' and the operation '+' to be a group ?

3. What is

$-13 \bmod 5$  ?

4. Polynomials

For the polynomial  $x^3 - x^2 + 4x - 12$

Find a the positive root ?

What is the degree of this polynomial ?

## Use cases

In your teams discuss any systems you have used that involved zero knowledge proofs.

Have you seen any applications of zero knowledge proofs other than with a blockchain ?

What is to you, the most important feature of zkp technology ?

Think of some use cases of zero knowledge proofs that you would like to see developed.