

1. Find  $\text{ord}(4)$ ,  $\text{ord}(5)$  and  $\text{ord}(6)$  in  $\mathbb{Z}_7^*$
2. (a) Show that  $n - 1 \in \mathbb{Z}_n^*$  for every  $n$   
(b) What is  $\text{ord}(n - 1)$  in  $\mathbb{Z}_n^*$ ?
3. For each group of units, list the elements and find a generator, if one exists
  - (a)  $\mathbb{Z}_5^*$
  - (b)  $\mathbb{Z}_9^*$
  - (c)  $\mathbb{Z}_8^*$
  - (d)  $\mathbb{Z}_{13}^*$
  - (e)  $\mathbb{Z}_{15}^*$
  - (f)  $\mathbb{Z}_{31}^*$