

1. Let $p = 7$

(a) Let $\alpha = 3$ and calculate $\alpha^i \bmod p$ for $i = 1, 2, \dots, 6$

It's handy to know the *Mathematica* command `Table[Mod[3^i,7], {i,1,6}]`

(b) Repeat for $\alpha = 2$

(c) What do you notice?

2. Let $p = 8$ and repeat (1) for $\alpha = 1, 2, \dots, 7$.

Let $i = 1, \dots, 7$ for each α

3. Let $p = 31$ and repeat (1) for $\alpha = 2$ and $\alpha = 3$.

Let $i = 1, \dots, 30$ for each α