## Exercises

- Let $n = 12$. Determine $ord_n(a)$ for each $a$ in the complete reduced residue system modulo $n$.
- Review the proof for the theorem: If $\gcd(a, n) = 1$ with $n > 0$, the positive integer $x$ is a solution the congruence $a^x \equiv 1 \pmod{n}$ if and only if $ord_n(a) \mid x$.
- Review the proof for the theorem: If $\gcd(a, n) = 1$ with $n > 0$, then

$$a^i \equiv a^j \pmod{n}$$

if and only if

$$i \equiv j \pmod{ord_n(a)}.$$