1. Textbook, Exercise 21.3. This exercise has 5 parts.

2. Textbook, Exercise 21.6, parts (b), (c).

3. Let \( p \geq 3 \) be prime and let \( g \) be a primitive root modulo \( p \). Show there exists \( k, 1 \leq k \leq p - 1 \) such that \( g^{k+1} \equiv g^k + 1 \pmod{p} \). For example, and this is just an example to make sure we are all on the same page!, if \( p = 13 \) and \( g = 7 \) (7 is a primitive root mod 13), then \( 7^5 \equiv 11 \pmod{13} \) and \( 7^6 \equiv 12 \equiv 1 + 1 \pmod{13} \), so \( k = 5 \).


5. Textbook, Exercise 24.1