

## Thoughts on 4.17 and 4.20

Exercise 4.17: Almost everyone approached the proof by way of contradiction; this is the most efficient method. So, begin by assuming that there's an element, say  $y$ , in  $G$  that generates  $G$  and is different from  $x$  and  $x^{-1}$ . With this,  $x$  would have to generate  $y$ , and vice versa. This should lead you to a contradiction.

However, a correct reference to Theorem 4.5 is essential!

Exercise 4.20: Fix  $b$  to be a conjugate of  $a$ . So  $b = xax^{-1}$  for some  $x$  in  $G$ . A complete proof will briefly explain why  $b^n = xa^n x^{-1}$  for any natural number  $n$ . With this, you should be able to show  $\text{ord}(b) = \text{ord}(a)$  without too much trouble. However there are two distinct cases to consider.