

Discrete math review unit:

- ▶ Sets etc (Monday)
- ▶ More DM concepts; proof techniques (Wednesday)
- ▶ Finishing proof techniques; more proofs (Friday)
- ▶ Counting and cardinality (next week Monday)

Today:

- ▶ Set proofs
- ▶ Inductive proofs
- ▶ Proofs about numbers

1.

- a. $\forall a \in \mathbb{N}, \gcd(a, 0) = a$
- b. $\forall a, b \in \mathbb{N}, \gcd(a, b) = \gcd(b, a \% b)$.

2.

- a. If $a \in \mathbb{N}$, p is a prime number, and $p|a$, then $p \nmid (a + 1)$.
- b. The set of primes is infinite.

3. $\sqrt{2}$ is irrational.

Do this next one for homework.

4. $\forall r \in \mathbb{R}, \forall n \in \mathbb{N}, \sum_{i=0}^n r^i = \frac{r^{n+1} - 1}{r - 1}$