# DM553 – Complexity and Computability – 2018 Proofs

What properties should a proof have?

- Think about how to present your proof before writing it. Help the reader.

- Recall the proof techniques you know, such as induction and proof by contradiction. Use them if appropriate.

- The order should be such that you start with what is known and end with with what should be proved. In between, steps follow logically from what was written earlier.

- Do not leave out too many steps. Make it clear, easy to follow.

- Make sure everything you use is defined, so the reader does not have to guess.

- Use logical notation, and avoid using the same symbol for different things.

- Do not include anything which is not necessary. Short and concise is better than long and wordy. (But see the previous two points.)

- Avoid handwaving — arrive at your conclusion in a logical, mathematical manner.

- Avoid circular logic, where you are implicitly assuming the result in order to prove it.

- Read your proof to make sure all steps make sense and would be clear to someone else. Pretend to be a little stupid when you do this. Check that your proof convincing.