Common mistakes in proofs

Mistakes in arithmetic or basic algebra

and logical errors such as:

Generalizing from examples

* if a fact holds true for particular element, ≠ the fact holds true for all domain elements
* to prove universal statements:
  - either check every element in the domain, or
  - prove the fact holds true for a generic / arbitrary element in the domain

Skipping steps

* must justify every step in a proof using allowed assumptions
* it's an error to assume a fact is true without proving a reason

Circular reasoning

* using the fact to be proven in the statement itself

Assuming facts that have not yet been proven

* every fact in a proof must be proven and referenced or must be established within the proof