

- In proofs by induction it is standard to define  $P(n)$  as a **predicate** function of  $n$ , i.e. a function of  $n$  that either **has a value of true or false**, so that what needs to be proved is that  $\forall n \in D, P(n)$ , where  $D$  is a subset of  $\mathbb{N}$ . Defining  $P(n)$  as a function of  $n$  that is not a predicate function, for example as the LHS or RHS of an equation, invariably leads to problems in the proof and should be avoided.
- **Proofs should not be argued from the conclusion.** In other words, you should not start from the conclusion, do stuff to it, and then say “hey, this is all good; I’m done”. You may do this in your rough work to help you figure out what are the important elements of the proof, but this rough work is not a proof, just like a list in bullet-point form is not an essay, words put together without articles or verbs are not sentences, and design diagrams are not full programs. All of these are examples of useful, and possibly important, rough work, but they are not finished work.