4.4 Prove:

$$P \rightarrow (Q \wedge R), P \vdash P \wedge Q$$

We're being asked to prove Q from the premises $(P \rightarrow (P \wedge R))$and P.

Solution

Each premise goes on a numbered line at the top of the proof.

Note the space between the wffs and the inference rule being used!

1	$P \rightarrow (Q \wedge R)$	A
2	P	A
3	$Q \wedge R$	$1, 2 \rightarrow \mathrm{E}$
4	Q	$3 \wedge \mathrm{E}$
5	$P \wedge Q$	$2, 4 \wedge \mathrm{I}$

The final line of the proof is always the conclusion we're trying to show.

Every line of the proof has a line number!

Every step of the proof has a justification. "A" means assumption/premise, the rest are inference rules we will learn! Often, the inference rules require us to cite line numbers.