Writing arguments using the Fitch bar:

1	P_1	
2	P_2	Premises
3	$\vdots$	
4	C	Conclusion

For example:

1	Socrates is a man
2	All men are mortal
3	Socrates is mortal

Writing proofs using the Fitch bar:

1	P_1	
2	P_2	Premises
3	$\vdots$	
4	S_1	
5	S_2	Steps
6	$\vdots$	
7	C	Conclusion

If each step is valid, argument from premises to conclusion will be valid. Proof by contradiction: If the premises are true, what is the first line that could be false?

Introducing Reiteration (Reit):

n	P	
	$\vdots$	
$\triangleright$	P	R, n

Informal Example:

1	Snow is white.	
2	Snow is white.	R, 1

Formal (FOL) Example:

1	$Large(a)$	
2	$Small(b)$	
3	$Small(b)$	R, 1

Formal statement of equality introduction:

$\triangleright$	$a = a$	$=$Intro

Formal statement of equality elimination:

n	$c = d$	
	$\vdots$	
m	$P(c)$	
	$\vdots$	
$\triangleright$	$P(d)$	$=$Elim, n, m

Ana Con, Taut Con, FO Con

There are no simple rules that involve the block language predicates, must use Ana Con instead. For example:

1	$FrontOf(a, b)$	
2	$FrontOf(b, c)$	
3	$FrontOf(a, c)$	AnaCon, 1, 2

AnaCon is extremely powerful, so often homework instructions will put constraints on your usage of it.

Nonconsequence

Rules of thumb:

- To show an argument is valid: exhibit proof
- To show an argument is *in*valid: exhibit counterexample

This makes sense if we look at the definition of validity.

- To prove an argument valid we must show the absence of a certain type of possibility.
- To prove an argument invalid we only need to show the existence of a certain type of possibility.

You might expect that it would be easier to refute an argument in FOL than to prove it. Remarkable fact: opposite is true!