

<i>Elimination Rules</i> (break a premise)	<i>Introduction Rules</i> (make a conclusion)
1. $\&E$ (ampersand Elimination)	1. $\&I$ (ampersand Introduction)
2. $\vee E$ (wedge Elimination)	2. $\vee I$ (wedge Introduction)
3. $\rightarrow E$ (arrow Elimination)	3. $\rightarrow I$ (arrow Introduction)
4. $\leftrightarrow E$ (double arrow Elimination)	4. $\leftrightarrow I$ (double arrow Introduction)
A (Rule of Assumption)	
RAA (Reductio ad absurdum)	
Rules to Memorize	
$m \&E$ <u>Premise:</u> (m) a conjunction <u>Conclusion:</u> any one of the two conjuncts	$m,n \&I$ <u>Premises:</u> (m) any WFF (i.e., one of the conjuncts) (n) any WFF (i.e., one of the conjuncts) <u>Conclusion:</u> the conjunction of m and n
$m \vee I$ <u>Premise:</u> (m) any WFF (i.e., one of the disjuncts) <u>Conclusion:</u> a disjunction containing m as disjunct	$m,n \vee E$ <u>Premises:</u> (m) a disjunction (n) denial of one of the disjuncts <u>Conclusion:</u> The other disjunct
$n \rightarrow I(m)$ <u>Premise:</u> (n) any WFF (i.e., consequent of conditional) <u>Conclusion:</u> a conditional with n as consequent <i>(antecedent m is discharged)</i>	$m,n \rightarrow E$ <u>Premises:</u> (m) a conditional (n) the antecedent of the conditional <u>Conclusion:</u> consequent of the conditional
$m \leftrightarrow E$ <u>Premise:</u> (m) a biconditional <u>Conclusion:</u> any one of the two mirrored conditionals	$m,n \leftrightarrow I$ <u>Premises:</u> (m) a conditional ($\Phi \rightarrow \Psi$) (n) the mirror conditional ($\Psi \rightarrow \Phi$) <u>Conclusion:</u> the biconditional (i.e., the two arrows in one)
NB: <i>The Assumption Rule does not have any premises</i>	$m,n RAA(k)$ <u>Premises:</u> (m) any WFF (Φ) (n) its denial ($\sim \Phi$) <u>Conclusion:</u> denial of k – the <i>discharged assumption</i>

Rules That Discharge Assumptions

Special Strategy of $\rightarrow I$:	Special Strategy of RAA:
1) Assume antecedent of conclusion 2) Solve for the consequent (i.e., as a conclusion) 3) Apply $\rightarrow I$ rule a. discharge the assumption made in step #1	1) Assume denial of what you're solving for 2) Derive a contradiction 3) Apply RAA rule (derive denial of <i>some</i> assumption) a. step #2 may be repeated depending on how many assumptions need to be discharged b. if more than one assumption is to be discharged, the final assumption to be discharged is assumption in step #1