

Algorithm for Clause Form:

('A \rightarrow B' = rewrite A as B)

1. Convert wff to Prenex Normal Form:

a) $(P \Leftrightarrow Q) \rightarrow ((P \Rightarrow Q) \wedge (Q \Rightarrow P))$

b) $(P \Rightarrow Q) \rightarrow (\neg P \vee Q)$

c) repeat: (i) $\neg\neg P \rightarrow P$

(ii) $\neg(P \wedge Q) \rightarrow (\neg P \vee \neg Q)$

(iii) $\neg(P \vee Q) \rightarrow (\neg P \wedge \neg Q)$

(iv) $\neg\exists x[\alpha] \rightarrow \forall x[\neg\alpha]$

(v) $\neg\forall x[\alpha] \rightarrow \exists x[\neg\alpha]$

until: ' \neg ' only applies to atomic wffs

d) Rename vars s.t. vars bound by diff qfrs have unique names

e) Move all qfrs left, w/o changing order

2. Convert PNF to Skolem NF:

a) $\forall x_1 \dots \forall x_n \exists y[\alpha(y)] \rightarrow \forall x_1 \dots \forall x_n[\alpha(f(x_1, \dots, x_n))]$

3. Convert SNF to Conjunctive NF:

a) $\forall x[\alpha(x)] \rightarrow \alpha(x)$

b) repeat: $(P \vee (Q \wedge R)) \rightarrow ((P \vee Q) \wedge (P \vee R))$

until: wff is a conjn of disjns of literals

4. Convert CNF to Clause Form:

a) $(P \vee Q) \rightarrow PQ$; each PQ is a clause

b) $(P \wedge Q) \rightarrow \{P, Q\}$

c) Rename vars s.t. each clause has diff vars