$$\neg P(x) \vee P(g(x))$$

$$P(\underline{x}) \rightarrow P(g(\underline{x})) \checkmark$$

$$\neg P(x) \vee P(\underset{z}{g}) \vee P(\underline{S(x)})$$

N set of clause unsat

$gnd(N, \Sigma)$ unsat

derive $\perp$ by ground subst

$C_1\sigma \quad C_2\sigma \qquad\qquad C_1\tau \quad C_2\tau$

sub

split

$C_3\sigma \qquad\qquad C_3\tau$

Fac

C_4

$\vdots$

$\perp$

inductively ✓

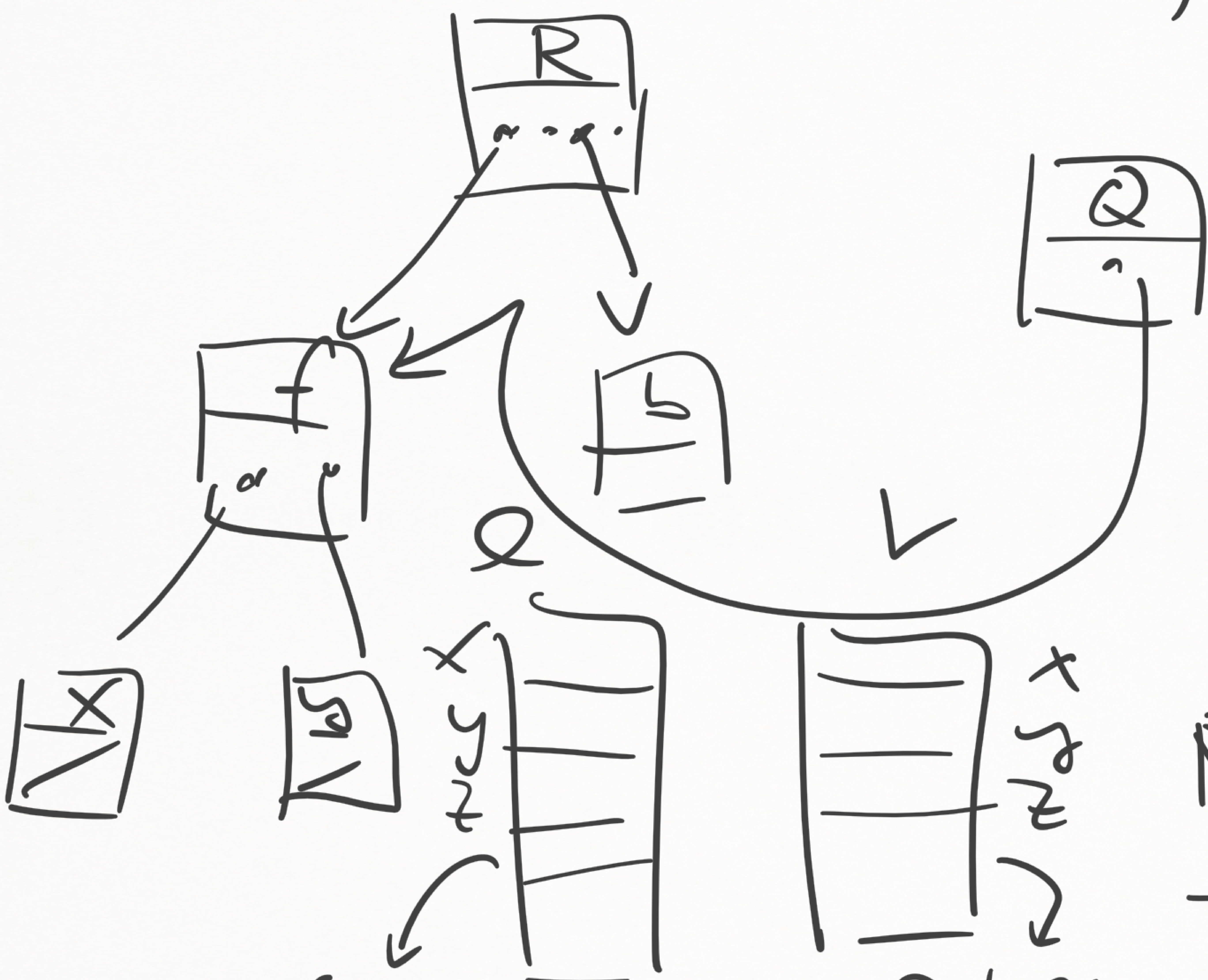
$$\neg R(x,y)^* \vee \neg R(y,z)^* \vee R(x,z)^*$$

$$\underbrace{\xrightarrow{R}\;\xrightarrow{R}\;\xrightarrow{R}\;\xrightarrow{R}\;\xrightarrow{R}}_{h}$$

$R(f(x,y),b)$

sharing

$Q(f(x,y))$



$R(f(x,y),b) = R(f(x,a),y)$

Clause shape normalization

$R(f(x,y),b) \vee Q(z)$

$\neg R(f(x,a),y) \vee Q(f(x,y))$

Condensation

$$C \vee L \vee L'$$

$$L\sigma = L'$$

e

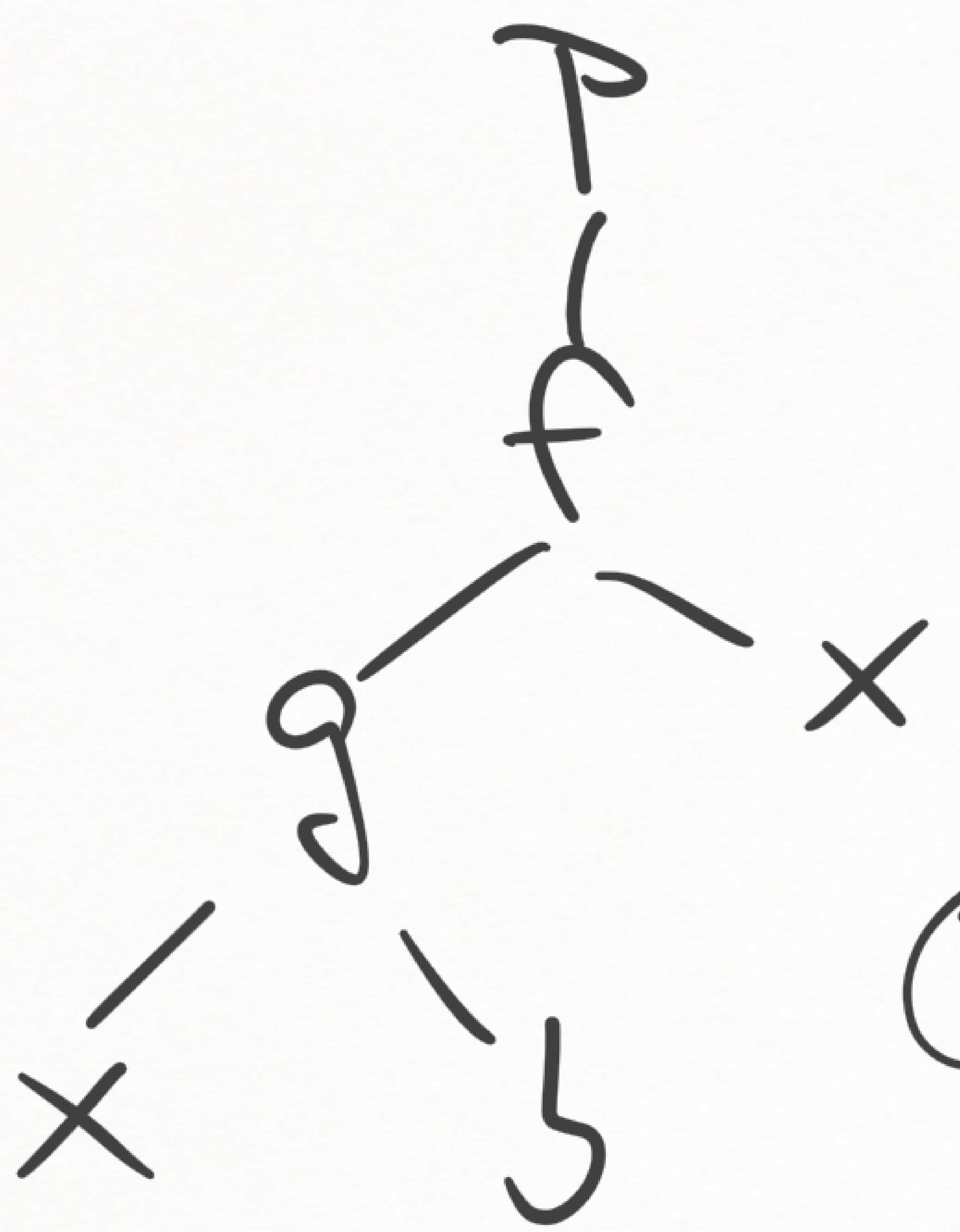
remove dup

subsumption

Indexing

Path Indexing

① $P(f(g(x,b),x))$



P f g *
P f g b
P f *

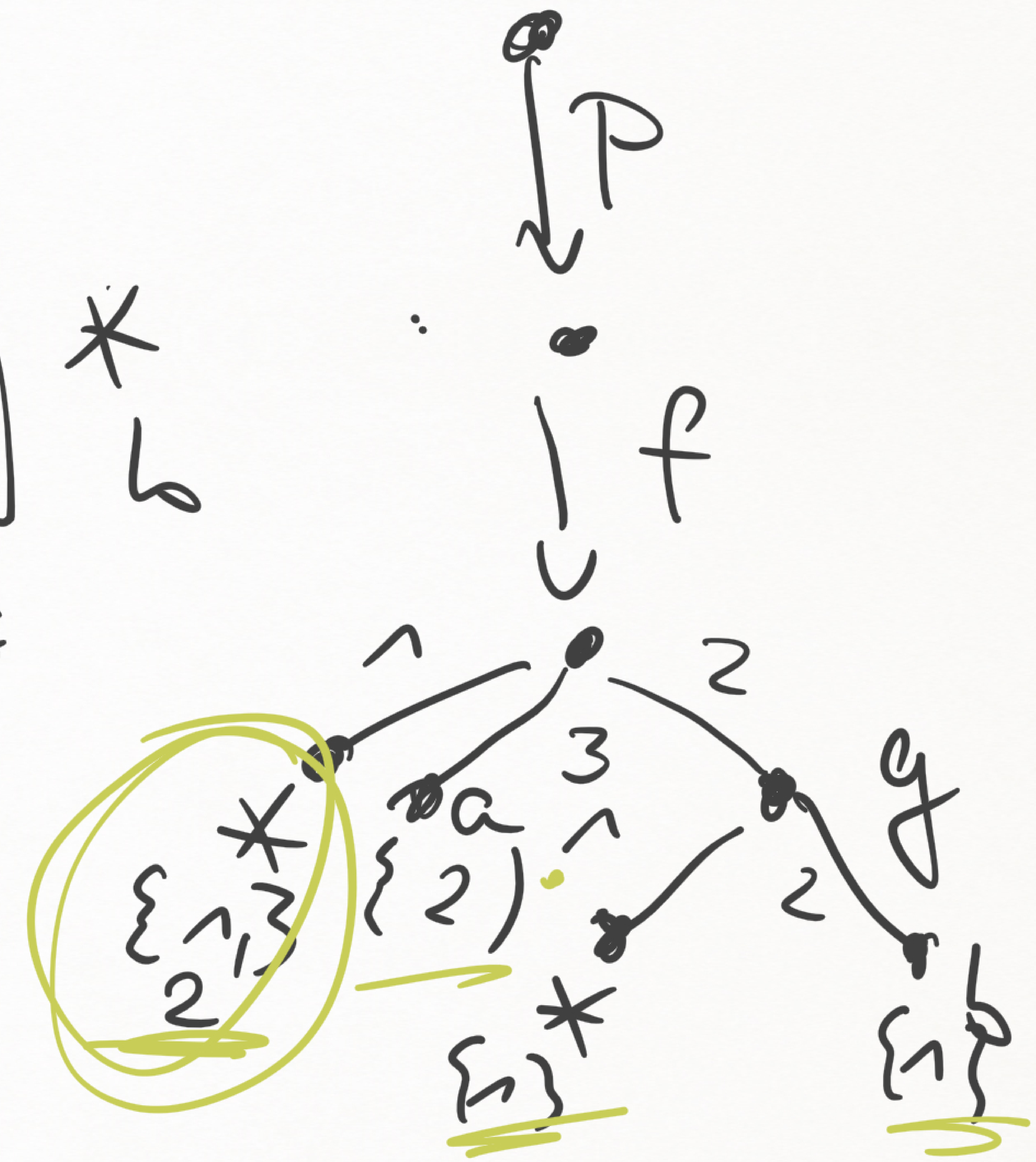
② $P(f(a,x))$

P f a
P f *

$P(f(x,b))$

P f *
P f b

interesting, like a term



$R(a,b)$

$\cancel{\neg P(x) \lor \underline{R}(x,y) \lor \underline{R}(y,z)}$

$\Longrightarrow N = \{ \cancel{\neg P(x) \lor R(x,a) \lor R(a,z)} \leftarrow$

lhuhd

$\neg P(x) \lor R(x,b) \lor R(b,z) \leftarrow$

$R(a,b)\}$

$N_1 \{ \neg P(x) \lor R(x,a)$

$\neg P(x) \lor R(x,b) \lor R(b,z)$

$R(a,b) \}$

$N_2 \{ R(a,z)$

$\neg P(x) \lor R(x,b) \lor R(b,z)$

$R(a,b) \}$

N unsat iff N_1 unsat <u>and</u> N_2 unsat