Simplification

1. transform to NNF
2. get rid of $=, \neq, \not<$:

$$\begin{array}{rcl} s = t & \Leftrightarrow & s < t + 1 \wedge t < s + 1 \\ \neg(s = t) & \Leftrightarrow & s < t \vee t < s \\ \neg(s < t) & \Leftrightarrow & t < s + 1 \end{array}$$

After that, only predicates of the form

$$hx < t,\ \ t < hx,\ \ k|hx + t,\ \ \neg(k|hx + t)$$

$$\neg(x < y) \wedge \neg(x = y + 3)$$
becomes
$$y < x + 1 \wedge (x < y + 3 \vee y + 3 < x)$$