Formula renaming

We extend the machinery from propositional to first-order logic: $\nu(\forall x\, \phi) = \nu(\exists x\, \phi) = \nu(\phi)$ and $\bar{\nu}(\forall x\, \phi) = \bar{\nu}(\exists x\, \phi) = \bar{\nu}(\phi)$.

Introduce top-down fresh predicates for beneficial subformulas:

$$\psi[\phi]_p \;\Rightarrow_{\mathsf{OCNF}}\; \psi[P(x_1, \ldots, x_n)]_p \wedge \mathsf{def}(\psi, p, P)$$

where $\{x_1, \ldots, x_n\}$ are the free variables in ϕ, P/n is a predicate new to $\psi[\phi]_p$, $\nu(\psi[\phi]_p) > \nu(\psi[P]_p \wedge \mathsf{def}(\psi, p, P))$, and $\mathsf{def}(\psi, p, P)$ is defined polarity dependent analogous to the propositional case:

$$\mathsf{def}(\psi, p, P) := \forall x_1, \ldots, x_n\, [\psi|_p \circ P(x_1, \ldots, x_n)]$$

where $\circ \in \{\rightarrow, \leftrightarrow, \leftarrow\}$.