

Exercise: English \equiv FOPL?

Translate the following expressions from English into the P.C., and identify whether the result is a term, atom, sentence, etc., and also whether it's ground or closed.

- The One Ring.
- Sam doesn't like Gollum.
- Sam likes stewed rabbit.
- All dragons love treasure.
- Every dragon has a favorite treasure.
- When Frodo wears the Ring, then the Nazgûl can see him.
Note that Nazgûl is plural.
- There is a fire hot enough to destroy the Ring.

1. $n(0)$

2. $\forall X \ n(X) \rightarrow n(s(X))$

3. $\forall X \ n(X) \rightarrow \neg \text{equal}(0, s(X))$

4. $\forall X \forall Y \ n(X) \wedge n(Y) \wedge \text{equal}(s(X), s(Y)) \equiv \text{equal}(X, Y)$

5. $\forall S \ \text{contains}(S, 0) \wedge (\forall X \ n(X) \wedge \text{contains}(S, X) \rightarrow \text{contains}(S, s(X))) \rightarrow \forall Y \ (n(Y) \rightarrow \text{contains}(S, Y))$