

Inference at \* 2 1  
of proof for Lemma p-fun-exp-compose:

1.  $T : \text{Type}$
  2.  $n : \mathbb{Z}$
  3.  $0 < n$
  4.  $\forall h, f : (T \rightarrow (T + \text{Top})). f \hat{\ } n - 1 \circ h = \text{primrec}(n - 1; h; \lambda i, g. f \circ g)$
  5.  $h : T \rightarrow (T + \text{Top})$
  6.  $f : T \rightarrow (T + \text{Top})$
- $\vdash \text{primrec}(1+(n - 1); \text{p-id}(); \lambda i, g. f \circ g) \circ h = f \circ \text{primrec}(n - 1; h; \lambda i, g. f \circ g)$   
by Subst  $\text{primrec}(1+(n - 1); \text{p-id}(); \lambda i, g. f \circ g)$   
 $=$   
 $f \circ \text{primrec}(n - 1; \text{p-id}(); \lambda i, g. f \circ g) \ 0$  THEN Auto

1: .....equality..... NILNIL

$$\vdash \text{primrec}(1+(n - 1); \text{p-id}(); \lambda i, g. f \circ g)$$

$$=$$

$$f \circ \text{primrec}(n - 1; \text{p-id}(); \lambda i, g. f \circ g)$$

2:

$$\vdash f \circ \text{primrec}(n - 1; \text{p-id}(); \lambda i, g. f \circ g) \circ h$$

$$=$$

$$f \circ \text{primrec}(n - 1; h; \lambda i, g. f \circ g)$$

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