

Inference at * 1 2 1 2 1
of proof for Lemma fast-fib:

1. $n : \mathbb{Z}$
 2. $0 < n$
 3. $\forall a, b : \mathbb{N}.$
 $\{m : \mathbb{N} \mid$
 $\forall k : \mathbb{N}.$
 $(a = \text{fib}(k))$
 $\Rightarrow ((k \leq 0) \Rightarrow (b = 0))$
 $\Rightarrow ((0 < k) \Rightarrow (b = \text{fib}(k - 1)))$
 $\Rightarrow (m = \text{fib}((n - 1) + k))\}$
 4. $a : \mathbb{N}$
 5. $b : \mathbb{N}$
 6. $\forall b_1 : \mathbb{N}.$
 $\{m : \mathbb{N} \mid$
 $\forall k : \mathbb{N}.$
 $(a + b = \text{fib}(k))$
 $\Rightarrow ((k \leq 0) \Rightarrow (b_1 = 0))$
 $\Rightarrow ((0 < k) \Rightarrow (b_1 = \text{fib}(k - 1)))$
 $\Rightarrow (m = \text{fib}((n - 1) + k))\}$
 7. $m : \mathbb{N}$
 8. $\forall k : \mathbb{N}.$
 $(a + b = \text{fib}(k))$
 $\Rightarrow ((k \leq 0) \Rightarrow (a = 0))$
 $\Rightarrow ((0 < k) \Rightarrow (a = \text{fib}(k - 1)))$
 $\Rightarrow (m = \text{fib}((n - 1) + k))$
 9. $k : \mathbb{N}$
 10. $a = \text{fib}(k)$
 11. $(k \leq 0) \Rightarrow (b = 0)$
 12. $(0 < k) \Rightarrow (b = \text{fib}(k - 1))$
- $\vdash m = \text{fib}(n + k)$
by (InstHyp [k+1] 8)
CollapseTHEN (Auto').

1:antecedent..... NILNIL

$\vdash a + b = \text{fib}(k + 1)$

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