```
reduce_factorization_cancel  THM

⊢  ∀a,b:ℤ, f,g:({a..b⁻}→ℕ), j:{a..b⁻}.
|  0<f(j)
|  ⇒
|  0<g(j)
|  ⇒
|  reduce_factorization(f; j) = reduce_factorization(g; j) ⇒ f = g
| by Autoℕ THEN FunExtensionality
|
1. a : ℤ
2. b : ℤ
3. f : {a..b⁻}→ℕ
4. g : {a..b⁻}→ℕ
5. j : {a..b⁻}
6. 0<f(j)
7. 0<g(j)
8. reduce_factorization(f; j) = reduce_factorization(g; j)
9. x : {a..b⁻}
⊢  f(x) = g(x)  by ApFun: Hyp:8 to: x
|
10. reduce_factorization(f; j)(x) = reduce_factorization(g; j)(x)
⊢  f(x) = g(x)
| by (-1) Def of reduce_factorization(<term>; <term>)
|    THEN
|    Reduce Hyp:-1
|
10. if x=₂j→ f(x)-1 else f(x) fi = if x=₂j→ g(x)-1 else g(x) fi
⊢  f(x) = g(x)  by SplitITE Hyp:-1 ...ℕ
END
```