```
⊢ ∀p,q:ℕ+. ∀L:ℤ List.  (seg_sum(p;q;L) = seg_sum(p - 1;q - 1;tl(L)))
|
BY RepeatFor 3 ((D 0 THENA Auto))
|
1. p: ℕ+
2. q: ℕ+
3. L: ℤ List
⊢ seg_sum(p;q;L) = seg_sum(p - 1;q - 1;tl(L))
|
BY Assert ⌜∃x:ℤ. (x = seg_sum(p - 1;q - 1;tl(L)))⌝⋅
|\
| ⊢ ∃x:ℤ. (x = seg_sum(p - 1;q - 1;tl(L)))
| |
1 BY (InstConcl [⌜seg_sum(p - 1;q - 1;tl(L))⌝]⋅ THEN Auto)
 \
  4. ∃x:ℤ. (x = seg_sum(p - 1;q - 1;tl(L)))
  ⊢ seg_sum(p;q;L) = seg_sum(p - 1;q - 1;tl(L))
  |
  BY D 4
  |
  4. x: ℤ
  5. x = seg_sum(p - 1;q - 1;tl(L))
  ⊢ seg_sum(p;q;L) = seg_sum(p - 1;q - 1;tl(L))
  |
  BY (RevHypSubst 5 0 THENA Auto)
  |
  ⊢ seg_sum(p;q;L) = x
  |
  BY RepUR ‘‘seg_sum segment‘‘ 0
  |
  ⊢ l_sum(firstn((q + 1) - p;nth_tl(p;L))) = x
  |
  BY RecUnfold ‘nth_tl‘ 0
  |
  ⊢ l_sum(firstn((q + 1) - p;if p ≤z 0 then L else nth_tl(p - 1;tl(L)) fi )) = x
  |
  BY AutoBoolCase ⌜p ≤z 0⌝⋅
  |
  2. ¬(p ≤ 0)
  3. q: ℕ+
  4. L: ℤ List
  5. x: ℤ
  6. x = seg_sum(p - 1;q - 1;tl(L))
  ⊢ l_sum(firstn((q + 1) - p;nth_tl(p - 1;tl(L)))) = x
  |
  BY Assert ⌜((q + 1) - p) = (((q - 1) + 1) - p - 1)⌝⋅
  |\
  | ⊢ ((q + 1) - p) = (((q - 1) + 1) - p - 1)
  | |
  1 BY Auto
   \
    7. ((q + 1) - p) = (((q - 1) + 1) - p - 1)
    ⊢ l_sum(firstn((q + 1) - p;nth_tl(p - 1;tl(L)))) = x
```

```
|
BY (HypSubst 7 0 THENA Auto)
|
⊢ l_sum(firstn(((q - 1) + 1) - p - 1;nth_tl(p - 1;tl(L)))) = x
|
BY (Fold ‘segment‘ 0 THEN Fold ‘seg_sum‘ 0)
|
⊢ seg_sum(p - 1;q - 1;tl(L)) = x
|
BY Auto
```