```
geom_series_step  THM

⊢  ∀q,n:ℕ. Σ(q↑n+1⁻) = Σ(q↑n⁻)+(q↑n) ∈ ℕ  by UnivCD
|
1. q : ℕ
2. n : ℕ
⊢  Σ(q↑n+1⁻) = Σ(q↑n⁻)+(q↑n)
| by RW (AddrC [2] (RecUnfoldC ‘geom_series‘)) 0 THEN SplitOnConclITE
|
|\
| .....truecase .....
| 3. n+1 = 0
| ⊢  0 = Σ(q↑n⁻)+(q↑n)  by Auto
|
.\
. .....falsecase .....
. 3. ¬n+1 = 0
. ⊢  Σ(q↑n+1-1⁻)+(q↑n+1-1) = Σ(q↑n⁻)+(q↑n)  by Assert (n+1-1 = n)
. |
. 4. n+1-1 = n
. ⊢   by HypSubst 4 0
. |
. |\
. | ⊢  Σ(q↑n⁻)+(q↑n) = Σ(q↑n⁻)+(q↑n)
. |   by Fold ‘member‘ 0
. |      THEN
. |      BackThru Thm* ∀n,m:ℕ. n+m ∈ ℕ    {nat_add}
. |
. .\
. . .....wf .....
. . 5. z : ℕ
. . ⊢  Σ(q↑z⁻)+(q↑z) = Σ(q↑n⁻)+(q↑n) ∈ Prop  by Analyze
. . |
. . |\
. . | ⊢  ℕ ∈ Type  by Auto
. . |
. . |\
. . | ⊢  Σ(q↑z⁻)+(q↑z) ∈ ℕ
. . |   by BackThru Thm* ∀n,m:ℕ. n+m ∈ ℕ    {nat_add}
. . |
. . .\
. . . ⊢  Σ(q↑n⁻)+(q↑n) ∈ ℕ
. . .   by BackThru Thm* ∀n,m:ℕ. n+m ∈ ℕ    {nat_add}
END
```