iter_via_intseg_split_pluck THM

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⊢  ∀A:Type, f:(A→A→A), u:A.
|  is_ident(A; f; u)
|  ⇒
|  is_assoc_sep(A; f)
|  ⇒
|  (∀a,c,b:ℤ, e:({a..b⁻}→A).
|   a≤c
|   ⇒
|   c<b
|   ⇒
|   (Iter(f;u) i:{a..b⁻}. e(i))
|   =
|   f
|   ((Iter(f;u) i:{a..c⁻}. e(i))
|   ,f(e(c),Iter(f;u) i:{c+1..b⁻}. e(i))))
| by SimilarTo: Thm: iter_via_intseg_split_mid
|
1. A : Type
2. f : A→A→A
3. u : A
4. is_ident(A; f; u)
5. is_assoc_sep(A; f)
6. a : ℤ
7. c : ℤ
8. b : ℤ
9. e : {a..b⁻}→A
10. a≤c
11. c<b
12. (Iter(f;u) i:{a..b⁻}. e(i))
|   =
|   f((Iter(f;u) i:{a..c⁻}. e(i)),Iter(f;u) i:{c..b⁻}. e(i))
⊢  (Iter(f;u) i:{a..b⁻}. e(i))
|  =
|  f((Iter(f;u) i:{a..c⁻}. e(i)),f(e(c),Iter(f;u) i:{c+1..b⁻}. e(i)))
| by Rewrite by Hyp:-1
|
⊢  f((Iter(f;u) i:{a..c⁻}. e(i)),Iter(f;u) i:{c..b⁻}. e(i))
|  =
|  f((Iter(f;u) i:{a..c⁻}. e(i)),f(e(c),Iter(f;u) i:{c+1..b⁻}. e(i)))
| by Analyze
|
⊢  (Iter(f;u) i:{c..b⁻}. e(i)) = f(e(c),Iter(f;u) i:{c+1..b⁻}. e(i))
| by Rewrite by Thm: iter_via_intseg_split_mid
|    Using:[a:= c | b:= b | c:= c+1]
|
⊢  f((Iter(f;u) i:{c..c+1⁻}. e(i)),Iter(f;u) i:{c+1..b⁻}. e(i))
|  =
|  f(e(c),Iter(f;u) i:{c+1..b⁻}. e(i))  by 2 Times Analyze
|
⊢  (Iter(f;u) i:{c..c+1⁻}. e(i)) = e(c)
  by BackThru:
     Thm*  ∀f:(A→A→A), u:A.
           is_ident(A; f; u)
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        ⇒
        (∀a,b:ℤ, e:({a..b⁻}→A).
         a+1 = b ⇒ (Iter(f;u) i:{a..b⁻}. e(i)) = e(a))
    {iter_via_intseg_singleton}
END
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