```
delete_fenum_value_wf_gen  THM

⊢  Inj({k:ℤ| P(k) }; {k:ℤ| Q(k) }; f)
|  ⇒
|  (∀m:{u:ℤ| P(u) }, k:{v:ℤ| Q(v) }.
|   (Replace value k by f(m) in f)
|   ∈ {u:ℤ| P(u) & ¬u = m }→{v:ℤ| Q(v) & ¬v = k })  by UnivCD
|
1. P : ℤ→Prop
2. Q : ℤ→Prop
3. f : {u:ℤ| P(u) }→{v:ℤ| Q(v) }
4. Inj({k:ℤ| P(k) }; {k:ℤ| Q(k) }; f)
5. m : {u:ℤ| P(u) }
6. k : {v:ℤ| Q(v) }
⊢  (Replace value k by f(m) in f)
|  ∈ {u:ℤ| P(u) & ¬u = m }→{v:ℤ| Q(v) & ¬v = k }
| by Compute ⌈Replace value k by f(m) in f⌉ THEN Analyze
|
7. i : {u:ℤ| P(u) & ¬u = m }
⊢  if f(i)=₂k→ f(m) else f(i) fi ∈ {v:ℤ| Q(v) & ¬v = k }
| by ApFun: f to: m THEN Analyze-1 THEN ApFun: f to: i THEN Analyze-1
|    THEN
|    i ∈ {u:ℤ| P(u) & ¬u = m ∈ ℤ }  Asserted THEN 2 Times Analyze-1
|
8. f(m) ∈ ℤ
9. Q(f(m))
10. f(i) ∈ ℤ
11. Q(f(i))
12. i ∈ ℤ
13. P(i)
14. ¬i = m
⊢  if f(i)=₂k→ f(m) else f(i) fi ∈ {v:ℤ| Q(v) & ¬v = k }
| by SplitITE Concl
|
|\
| .....truecase .....
| 15. f(i) = k
| ⊢  f(m) ∈ {v:ℤ| Q(v) & ¬v = k }  by Guarding (f(<arg>)) Analyze
| |
| ⊢  ¬f(m) = k  by SimilarTo: Hyp:14
| |
| 16. f(m) = k
| ⊢  i = m  by BackThru: Inj({k:ℤ| P(k) }; {k:ℤ| Q(k) }; f)
|
.\
. .....falsecase .....
. 15. f(i) ≠ k
. ⊢  f(i) ∈ {v:ℤ| Q(v) & ¬v = k }  by Guarding (f(<arg>)) Analyze
END
```