```
rem_invariant  THM

⊢  ∀a,b:ℕ, n:ℕ+. ((a+b·n) rem n) = (a rem n)
| by Auto
|    THEN
|    Inst: Thm* ∀i,j:ℕ. i·j ∈ ℕ    {multiply_nat_wf} Using:[b | n]
|    THEN
|    ElaborateDivision Auto 0
|
1. a : ℕ
2. b : ℕ
3. n : ℕ+
4. b·n ∈ ℕ
5. a+b·n = ((a+b·n) ÷ n)·n+((a+b·n) rem n)
6. a = (a ÷ n)·n+(a rem n)
7. ((a+b·n) rem n) ∈ ℕn
8. (a rem n) ∈ ℕn
⊢  ((a+b·n) rem n) = (a rem n)
  by FwdThru:
     Thm* ∀k:ℕ+, r1,r2:ℕk, q1,q2:ℤ.
          q1·k+r1 = q2·k+r2 ⇒ q1 = q2 & r1 = r2
     {division1_sfa}
     on [ ((a ÷ n)+b)·n+(a rem n) = ((a+b·n) ÷ n)·n+((a+b·n) rem n) ]
END
```