```
fib_coprime  THM

⊢  ∀n:ℕ. CoPrime(fib(n),fib(n+1))
| by (Analyze 0) THEN (OnVar ‘n’ NatInd)
|
|\
| .....basecase .....
| ⊢  CoPrime(fib(0),fib(0+1))  by RecUnfold ‘fib‘ 0 THEN AbReduce 0
| |
| ⊢  CoPrime(1,1)
|   by Unfold ‘coprime‘ 0
|      THEN
|      BackThru Thm* ∀a:ℤ. GCD(a;1;1)    {gcd_p_one}
|
.\
. .....upcase .....
. 1. n : ℤ
. 2. 0<n
. 3. CoPrime(fib(n-1),fib(n-1+1))
. ⊢  CoPrime(fib(n),fib(n+1))  by OnMCls [0;3] ArithSimp
. |
. 3. CoPrime(fib(-1+n),fib(n))
. ⊢  CoPrime(fib(n),fib(1+n))  by RecCaseSplitNth 2 ‘fib‘
. |
. |\
. | .....truecase .....
. | 4. 1+n = 0 ∨ 1+n = 1
. | ⊢  CoPrime(fib(n),1)  by Auto
. |
. .\
. . .....falsecase .....
. . 4. ¬1+n = 0 & ¬1+n = 1
. . ⊢  CoPrime(fib(n),fib(1+n-1)+fib(1+n-2))  by ArithSimp 0
. . |
. . ⊢  CoPrime(fib(n),fib(-1+n)+fib(n))
. .   by TryOnAllClauses (Unfold ‘coprime‘)
. .      THEN
. .      SeqOnM
. .      [FwdThru
. .       Thm* ∀a,b,y:ℤ. GCD(a;b;y) ⇒ GCD(b;a;y)    {gcd_p_sym}
. .       [3]
. .      ;Using [‘k’,1]
. .       (FwdThru
. .        Thm* ∀a,b,y,k:ℤ. GCD(a;b;y) ⇒ GCD(a;b+k•a;y)
. .        {gcd_p_shift}
. .        [-1])
. .      ;ArithSimp -1]
END
```