prime_elim THM

```
⊢  ∀p:ℤ.
|  prime(p) ⇒ ¬p = 0 & ¬(p ~ 1) & (∀a:ℤ. a | p ⇒ (a ~ 1) ∨ (a ~ p))
| by RepD
|    THEN
|    (FwdThru Thm* ∀a:ℤ. prime(a) ⇒ atomic(a)    {prime_imp_atomic}
|     [-1])
|    THEN
|    (Unfold `atomic` -1)
|    THEN
|    GenRepD
|    THEN
|    (Try Trivial)
|
1. p : ℤ
2. prime(p)
3. ¬p = 0
4. ¬(p ~ 1)
5. ¬reducible(p)
6. a : ℤ
7. a | p
⊢  (a ~ 1) ∨ (a ~ p)
| by (Unfold `reducible` 5)
|    THEN
|    (RWW "not_over_and not_over_exists dneg_elim_a" 5)
|
5. ∀b,c:ℤ⁻⁰. (b ~ 1) ∨ (c ~ 1) ∨ ¬p = b·c
6. a : ℤ
7. a | p
⊢  (a ~ 1) ∨ (a ~ p)  by Analyze 7
|
7. c : ℤ
8. p = a·c
⊢  (a ~ 1) ∨ (a ~ p)  by Decide (a = 0)
|
|\
| 9. a = 0
| ⊢  (a ~ 1) ∨ (a ~ p)  by RWO "9" 8
|
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. 9. ¬a = 0
. ⊢  (a ~ 1) ∨ (a ~ p)  by Decide (c = 0)
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. |\
. | 10. c = 0
. | ⊢  (a ~ 1) ∨ (a ~ p)  by RWO "10" 8
. |
. .\
. . 10. ¬c = 0
. . ⊢  (a ~ 1) ∨ (a ~ p)  by (InstHyp [a;c] 5) THEN ProveProp1
. . |
. . .....ProveProp1: unproved goal .....
. . 11. c ~ 1
. . ⊢  (a ~ 1) ∨ (a ~ p)  by Assert (p ~ (a·c))
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. . |
. . |\
. . | .....assertion .....
. . | ⊢  p ∼ (a·c)  by RelRST
. . |
. . .\
. . . 12. p ∼ (a·c)
. . . ⊢  (a ∼ 1) ∨ (a ∼ p)  by (RWO "11" 12) THEN (ArithSimp 12)
. . . |
. . . 12. p ∼ a
. . . ⊢  (a ∼ 1) ∨ (a ∼ p)  by (Sel 2 (Analyze 0)) THEN RelRST
END
```