Matita

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```
intros.elim n
  [ assumption
  | apply H1 ]
qed.

theorem nat_case1:
 \forall n:nat.\forall P:nat \to Prop.
  (n=0 \to P 0) \to  (\forall m:nat. (n=(S m) \t
intros 2; elim n
  [ apply H;reflexivity
  | apply H2;reflexivity ]
qed.

theorem nat_elim2 :
 \forall R:nat \to nat \to Prop.
  (\forall n:nat. R 0 n)
  \to (\forall n:nat. R (S n) 0)
  \to (\forall n,m:nat. R n m \to R (S n) (S
  \to \forall n,m:nat. R n m.
intros 5;elim n
  [ apply H
  | apply (nat_case m)
    [ apply H1
    | intro; apply H2; apply H3 ] ]
qed.

theorem decidable_eq_nat : \forall n,m:nat.de
 intros.unfold decidable.
 apply (nat_elim2 (\lambda n,m.(Or (n=m) ((n=
 [ intro; elim n1
```

nat.ma outline

?16

R:nat → nat → Prop
H:∀ n:nat.R O n
H1:∀ n:nat.R (S n) O
H2:∀ n:nat.∀ m:nat.R n m → R (S n) (S m)
n:nat
n1:nat
H3:∀ m:nat.R n1 m
m:nat

———————

∀ m:nat.R (S n1) (S m)

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about:proof

Locate

Conjectures:1
{...} ⊢16:∀ m:nat.R (S n1) (S m)
(nat_elim2)
Assume R:nat → nat → Prop
Suppose (H) ∀ n:nat.R O n
Suppose (H1) ∀ n:nat.R (S n) O
Suppose (H2) ∀ n:nat
.∀ m:nat
R n m → R (S n) (S m)
Assume n:nat
we proceed by induction on n
to prove Π m:nat.R n m
Case O ⇒
the thesis becomes Π m:nat.R O m