```
decidable__cand  THM

⊢  ∀P:Prop, Q:Prop(given P). Dec(P) ⇒ (P ⇒ Dec(Q)) ⇒ Dec(P & Q)
| by UnivCD
|
|\
| 1. P : Prop
| 2. Q : Prop(given P)
| 3. Dec(P)
| 4. P ⇒ Dec(Q)
| ⊢  Dec(P & Q)  by Analyze-2
| |
| |\
| | 3. P
| | 4. P ⇒ Dec(Q)
| | ⊢  Dec(P & Q)  by Analyze4
| | |
| | 4. Dec(Q)
| | ⊢  Dec(P & Q)
| | | by Inst:
| | |    Thm*  ∀Q:Prop(given P). P ⇒ Q ∈ Prop
| | |    {guarded_prop_to_prop}
| | |    Using:[P | Q]
| | |
| | 5. Q ∈ Prop
| | ⊢  Dec(P & Q)  by SimilarTo: Hyp:4
| | |
| | 6. P & Q
| | ⊢  Q  by Analyze-1
| |
| .\
| . 3. ¬P
| . 4. P ⇒ Dec(Q)
| . ⊢  Dec(P & Q)  by At Prop Select: 2
| . |
| . ⊢  ¬(P & Q)  by At Prop SimilarTo: Hyp:3
| . |
| . 5. P & Q
| . ⊢  P  by Analyze-1
|
.\
. .....wf .....
. 1. P : Prop
. 2. Q : Prop(given P)
. 3. Dec(P)
. ⊢  (P ⇒ Dec(Q)) ∈ Prop  by Analyze
. |
. |\
. | ⊢  P ∈ Prop  by Trivial
. |
. .\
. . 4. P
. . ⊢  Dec(Q) ∈ Prop  by Analyze
. . |
. . ⊢  Q ∈ Prop
```

```
. .   by BackThru:
. .      Thm*  ∀Q:Prop(given P). P ⇒ Q ∈ Prop
. .      {guarded_prop_to_prop}
END
```