```
demorgan1  THM

⊢  Dec(P) ⇒ Dec(Q) ⇒ (¬(P ∨ Q) ⟺ ¬P & ¬Q)  by GenUnivCD
|
1. P : Prop
2. Q : Prop
3. Dec(P)
4. Dec(Q)
⊢  ¬(P ∨ Q) ⟺ ¬P & ¬Q  by UnfoldTopAb 3 THEN UnfoldTopAb 4
|
3. P ∨ ¬P
4. Q ∨ ¬Q
⊢  ¬(P ∨ Q) ⟺ ¬P & ¬Q  by Analyze 3 THEN Analyze 4
|
|\
| 3. P
| 4. Q
| 5. ¬(P ∨ Q)
| ⊢  ¬P  by Analyze 5 THEN DNth 1 0
|
|\
| 3. P
| 4. Q
| 5. ¬(P ∨ Q)
| ⊢  ¬Q  by Analyze 5 THEN DNth 1 0
|
|\
| 3. P
| 4. ¬Q
| 5. ¬(P ∨ Q)
| ⊢  ¬P  by Analyze 5 THEN DNth 1 0
|
|\
| 3. ¬P
| 4. Q
| 5. ¬(P ∨ Q)
| ⊢  ¬Q  by Analyze 5 THEN DNth 2 0 THEN Trivial
|
.\
. 3. ¬P
. 4. ¬Q
. 5. ¬P
. 6. ¬Q
. ⊢  ¬(P ∨ Q)  by Analyze 0
. |
. 7. P ∨ Q
. ⊢  False  by Analyze 7
. |
. |\
. | 7. P
. | ⊢  False  by RenameVar ‘g’ 7 THEN Witness3 g
. |
. .\
. . 7. Q
. . ⊢  False  by RenameVar ‘g’ 7 THEN Witness4 g
```

```
END
```