

```

┆  $\forall [P, Q: \mathbb{P}]. ((P \Rightarrow Q) \Rightarrow (\neg\neg((\neg P) \vee Q)))$ 
|
BY RepeatFor 2 ((UD THENA Auto))
|
[1]. P:  $\mathbb{P}$ 
[2]. Q:  $\mathbb{P}$ 
┆  $(P \Rightarrow Q) \Rightarrow (\neg\neg((\neg P) \vee Q))$ 
|
BY RepeatFor 2 ((D 0 THENA Auto))
|
3.  $P \Rightarrow Q$ 
4.  $\neg((\neg P) \vee Q)$ 
┆ False
|
BY Duplicate 4
|
5.  $\neg((\neg P) \vee Q)$ 
┆ False
|
BY (Unfold 'not' 5 THEN D 5)
| \
| ┆  $(P \Rightarrow \text{False}) \vee Q$ 
| |
1 BY (OrLeft THENA Auto)
| |
| ┆  $P \Rightarrow \text{False}$ 
| |
1 BY (D 0 THENA Auto)
| |
| 5. P
| ┆ False
| |
1 BY (Unfold 'not' 4 THEN D 4)
| | \
| | 4. P
| | ┆  $(P \Rightarrow \text{False}) \vee Q$ 
| | |
1 2 BY (OrRight THENA Auto)
| | |
| | ┆ Q
| | |
1 2 BY D 3
| | | \
| | | 3. P
| | | ┆ P
| | | |
1 2 3 BY NthHyp 3
| | | \
| | | 3. P
| | | 4. Q
| | | ┆ Q
| | | |
1 2 BY NthHyp 4.

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| \
|  4. P
|  5. False
|  ⊢ False
|  |
1  BY NthHyp 5
|  \
|  5. False
|  ⊢ False
|  |
|  BY NthHyp 5

```

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Extract: λpq.f. (f (inl (λp.(f (inr (pq p) )))))
  where pq : P ⇒ Q
        f : ¬((¬P) ∨ Q) ≡ (((¬P) ∨ Q) ⇒ False)
        p : P

```