

Inference at * 1
of proof for Lemma decidable_and:

1. $P : \mathbb{P}$
2. $Q : \mathbb{P}$
3. $P \vee (\neg P)$
4. $Q \vee (\neg Q)$
 $\vdash (P \ \& \ Q) \vee (\neg(P \ \& \ Q))$
by ((D 4)
CollapseTHEN (D 3)).

1:

3. P
4. Q
 $\vdash (P \ \& \ Q) \vee (\neg(P \ \& \ Q))$

2:

3. $\neg P$
4. Q
 $\vdash (P \ \& \ Q) \vee (\neg(P \ \& \ Q))$

3:

3. P
4. $\neg Q$
 $\vdash (P \ \& \ Q) \vee (\neg(P \ \& \ Q))$

4:

3. $\neg P$
4. $\neg Q$
 $\vdash (P \ \& \ Q) \vee (\neg(P \ \& \ Q))$

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