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. $\neg Q$

$\vdash (P \ \& \ Q) \vee (\neg(P \ \& \ Q))$

.

---

http://www.nuprl.org/FDLcontent/p0_942988_/p121_103248_{decidable__and}1.html