

$$\frac{\frac{(P \wedge R) \vee (Q \wedge R)}{(P \vee Q)} \quad \frac{\frac{[P \wedge R]^1}{P} \quad \frac{[Q \wedge R]^1}{Q}}{P \vee Q} \quad \frac{(P \wedge R) \vee (Q \wedge R)}{R} \quad \frac{[P \wedge R]^1}{R} \quad \frac{[Q \wedge R]^1}{R}}{(P \vee Q) \wedge R}$$

1	(P ∧ R) ∨ (Q ∧ R)	
2	P ∧ R	
3	P	
4	P ∨ Q	
5	Q ∧ R	
6	Q	
7	P ∨ Q	
8	P ∨ Q	by 1, 2–4, 5–7
9	P ∧ R	
10	R	
11	Q ∧ R	
12	R	
13	R	by 1, 9–10, 11–2
14	(P ∨ Q) ∧ R	by 8, 13

$$\left| \begin{array}{l} h : P \wedge Q \\ \vdots \\ \alpha : R \end{array} \right. \Rightarrow \left| \begin{array}{l} h : P \wedge Q \\ \hline a : P \\ b : Q \\ \vdots \\ \alpha : R \end{array} \right.$$

1	$P \vee Q$	
2	$\neg Q$	
3	\overline{P}	
4	P	R,3
5	\overline{Q}	
6	$\neg Q$	R,2
7	\perp	\neg E, 5, 6
8	P	\perp E, 7
9	P	\vee E, 1, 3-4, 5-8 ???

1	P	
2	$P \rightarrow Q$	
3	\overline{Q}	Hello_you
3	Q	Hello_you \Rightarrow Hello_you

```

%F 1 / P
%F 2 | P→Q
%F   | ----
%F 3 | Q    \Lean{Hello_you}
%F 3 \ Q    \Tac{Hello_you}{Hello_you}
%L
%L defftch "???"
$$\pu
  \ftch{??}
a  $$                                     b
```