

1: $(E \vee F) \wedge (E \vee G)$ premise

2: $E \vee F$ \wedge elim 1

3: $E \vee G$ \wedge elim 1

4: E assumption

5: $E \vee (F \wedge G)$ \vee intro 4

6: F assumption

...

7: $E \vee (F \wedge G)$

8: $E \vee (F \wedge G)$ \vee elim 2,4-5,6-7