

for argument:

$$P \rightarrow Q$$

$$Q \rightarrow R$$

$$\sim (R \vee P)$$

$$\therefore \sim (\sim P \rightarrow \sim R)$$

|   |   |   | (*)               | (*)               |            | (*)               |          |          |                             | (C)                                |
|---|---|---|-------------------|-------------------|------------|-------------------|----------|----------|-----------------------------|------------------------------------|
| P | Q | R | $P \rightarrow Q$ | $Q \rightarrow R$ | $R \vee P$ | $\sim (R \vee P)$ | $\sim P$ | $\sim R$ | $\sim P \rightarrow \sim R$ | $\sim (\sim P \rightarrow \sim R)$ |
| T | T | T | T                 | T                 | T          | F                 | F        | F        | T                           | F                                  |
| T | T | F | T                 | F                 | T          | F                 | F        | T        | T                           | F                                  |
| T | F | T | F                 | T                 | T          | F                 | F        | F        | T                           | F                                  |
| T | F | F | F                 | T                 | T          | F                 | F        | T        | T                           | F                                  |
| F | T | T | T                 | T                 | T          | F                 | T        | F        | F                           | T                                  |
| F | T | F | T                 | F                 | F          | T                 | T        | T        | T                           | F                                  |
| F | F | T | T                 | T                 | T          | F                 | T        | F        | F                           | T                                  |
| F | F | F | T                 | T                 | F          | T                 | T        | T        | T                           | F                                  |

concl NOT True  
when all Premi true - INVALID!