

(13)

(b) $((\neg \phi \leftrightarrow \psi) \rightarrow (\phi \rightarrow \neg \psi))$

| Assump. | Line | No | Assertion | Justification |
|---------|------|----|---|---------------|
| 1 | 1 | | $(\neg \phi \leftrightarrow \psi)$ | Ass ✓ |
| 2 | 2 | | ϕ | Ass ✓ |
| 1, 2 | 3 | | $\neg \psi$ | Taut 1, 2 ✓ |
| 1 | 4 | | $(\phi \rightarrow \neg \psi)$ | CP(3) ✓ |
| | 5 | | $((\neg \phi \leftrightarrow \psi) \rightarrow (\phi \rightarrow \neg \psi))$ | CP(4) ✓ |

Line 3: $((\neg \phi \leftrightarrow \psi) \& \phi) \rightarrow \neg \psi$

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 |
| 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
| 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |

(15)