

1.1.1
(a)

p : Sun shining today

q : Sun shining tomorrow

$p \rightarrow \neg q$

(d)

p : request occurring

q : eventually acknowledged

r : requesting process ... progress

$p \rightarrow (q \vee r)$

(1) A possible answer:

$$\left((p \wedge q) \rightarrow r \right) \wedge \left(\neg(p \wedge q) \rightarrow s \right)$$

Another possible answer:

$$p \wedge q \leftrightarrow r$$

$$\left(p \wedge q \rightarrow r \right) \wedge \underbrace{\left(\neg(p \wedge q) \rightarrow \neg r \right)}_{r \rightarrow (p \wedge q)}$$

} equivalent
formulas

1.1.2

(e)

$$(p \vee q) \rightarrow ((\neg p) \wedge r)$$

(g)

$$(p \vee q) \wedge r$$

$$p \vee (q \wedge r)$$

Not equivalent!