Solution:To construct the truth table for a compound proposition, we work from the inside out. In each case, we will show the intermediate steps. In part (d), for example, we first construct the truth table for p V q, then the truth table for p /\ q, and finally combine them to get the truth table for (p V q) → (p /\ q). For parts (a) and (b) we have the following table (column three for part (a), column four for part (b)).

P	~P	p/\~p	p V ~p
T	F	F	T
F	T	F	T

For part (c) we have the following table.

p	q	~q	p v ~q	(p v ~q) → q
T	T	F	T	T
T	F	T	T	F
F	T	F	F	T
F	F	T	T	F

For part (d) we have the following table.

P	q	pVq	p /\ q	(p v q) → (p /\ q)
T	T	T	T	T
T	F	T	F	F
F	T	T	F	F
F	F	F	F	T

For part (e) we have the following table. This time we have omitted the column explicitly showing the negations of p and q. Note that this true proposition is telling us that a conditional statement and its contrapositive always have the same truth value.

p	q	p→ q	~q →~P	(p→ q) ←→ (~q → ~p)
T	T	T	T	T
T	F	F	F	T
F	T	T	T	T
F	F	T	T	T

For part (f) we have the following table. The fact that this proposition is not always true tells us that knowing a conditional statement in one direction does not tell us that the conditional statement is true in the other direction.

p	q	$p \rightarrow q$	$q \rightarrow p$	$(p \rightarrow q) \rightarrow (q \rightarrow p)$
T	T	T	T	T
T	F	F	T	T
F	T	T	F	F
F	F	T	T	T