Homework 9
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1.

A.

P	~P
TRUE	FALSE
FALSE	TRUE

B.

P	Q	P => Q
TRUE	TRUE	TRUE
FALSE	TRUE	TRUE
TRUE	FALSE	FALSE
FALSE	FALSE	TRUE

C.

P	Q	~Q => ~P
TRUE	TRUE	TRUE
FALSE	TRUE	TRUE
TRUE	FALSE	FALSE
FALSE	FALSE	TRUE

D.

P	Q	~P => ~Q
TRUE	TRUE	TRUE
FALSE	TRUE	FALSE
TRUE	FALSE	TRUE
FALSE	FALSE	TRUE

E.

P	Q	R	P ^ (Q ^ R)
TRUE	TRUE	TRUE	TRUE
FALSE	TRUE	TRUE	FALSE
TRUE	FALSE	TRUE	FALSE
FALSE	FALSE	TRUE	FALSE
TRUE	TRUE	FALSE	FALSE
FALSE	TRUE	FALSE	FALSE
TRUE	FALSE	FALSE	FALSE
FALSE	FALSE	FALSE	FALSE

F.

P	Q	R	(P ^ Q) v (P ^ R)
TRUE	TRUE	TRUE	TRUE
FALSE	TRUE	TRUE	FALSE
TRUE	FALSE	TRUE	TRUE
FALSE	FALSE	TRUE	FALSE
TRUE	TRUE	FALSE	TRUE
FALSE	TRUE	FALSE	FALSE
TRUE	FALSE	FALSE	FALSE
FALSE	FALSE	FALSE	FALSE

2. Entailment is the idea that one statement logically follows another. For instance, if A entails B then A is a subset of B logically. It is important because it allows us to make implicit information in a situation explicit

3.

P	Q	P => Q |= ~Q => ~P
TRUE	TRUE	TRUE
FALSE	TRUE	TRUE
TRUE	FALSE	TRUE
FALSE	FALSE	TRUE

4.

P	Q	(P, P => Q) |= Q
TRUE	TRUE	TRUE
FALSE	TRUE	FALSE
TRUE	FALSE	TRUE
FALSE	FALSE	FALSE