Practice Quiz 2

Question 1

Compute the truth table for the following sentence of PL.

P	Q	(P ∧ ¬ Q)	≡	¬ (P ⊃ Q)
T	T	T F F	T	F T
T	F	T T T	T	T F
F	T	F F F	T	F T
F	F	F F T	T	F T

Is the above sentence a tautology [**X**], a contradiction [ ], or a contingency [ ]?

Question 2 :

Consider the following argument:

1. (A ⊃ B) ∨ (B ⊃ A)
2. ¬(A ∧ B)
3. ¬A
4. ∴ B

A	B	(A ⊃ B)	∨	(B ⊃ A)	¬	(A ∧ B)	¬	A	∴ B
T	T	T	T	T	F	T	F		T
T	F	F	T	T	T	F	F		F
F	T	T	T	F	T	F	T		T
F	F	T	T	T	T	F	T		F

Compute the truth tables for each of the premises and the conclusion.

Is the argument valid? [ ] Yes **[X]** No

If not, which interpretation or interpretations are counterexamples?

The interpretation which assigns A to False and B to False is a counterexample.

Question 3 (10 pts):

Consider the following argument:

1. (A ⊃ B)
2. (B ⊃ X)
3. A
4. ∴ X

A	B	X	(A ⊃ B)	(B ⊃ X)	A	∴ X
T	T	T	T	T	T	T
T	T	F	T	F	T	F
T	F	T	F	T	T	T
T	F	F	F	T	T	F
F	T	T	T	T	F	T
F	T	F	T	F	F	F
F	F	T	T	T	F	T
F	F	F	T	T	F	F

Compute truth tables for each of the premises and the conclusion.

Is the argument valid? **[X]** Yes [ ] No

If not, which interpretation or interpretations are counterexamples?