True or false?

Some invalid arguments have a false conclusion

Some unsound arguments have a false conclusion

No valid arguments have a true conclusion

Every sound argument has a true conclusion

Every argument with a true conclusion is sound

WFFS?

(~(Q v ~(B)) v (E <-> (D v X)))

P <-> (~Q v R)

(P <-> ~Q v R)

TRANSLATE!!!

P: John dances.

Q: Mary dances.

R: Bill dances.

S: John is happy.

T: Mary is happy.

U: Bill is happy.

Mary will dance if John or Bill but not both dance.

John dances and so does Mary, but Bill does not, then Mary will not be happy but John and Bill will.

Mary will be happy if and only if John is happy.

Provided that Bill is unhappy, John will not dance unless Mary is dancing.

Tautology, Inconstistent, or Contingent?

$A \& \sim A$ $A \vee \sim A$ $A \rightarrow (B \vee \sim B)$

Which ones are equivalent?

$(C \& \sim C) \leftrightarrow (C \vee \sim C)$ $C \rightarrow C$ $\sim(C \vee \sim C)$

Valid or not?

P <-> ~Q, Q <-> ~R, R <-> ~S |- P <-> S

Q->(P->(R&~Q)), ~Q->~(T v V), (U & S)<->P |- (S->~U)v~T

PROOFS!!!

P&Q->R&S,RvS->T,P&Q |- T

1 (1)	**P&Q->R&S**	**A**
2 (2)	**RvS->T**	**A**
3 (3)	**P&Q**	**A**

(QvR)&~S->T,Q&U,~Sv~U |- T&U

1 (1)	**(QvR)&~S->T**	**A**
2 (2)	**Q&U**	**A**
3 (3)	**~Sv~U**	**A**