Review: logical & tautological relations

(Small(b) ∧ ∀x Cube(x)) → Cube(b)

convert to TFF

(A ∧ B) → C *logical truth

(Small(b) ∧ ∀x Cube(x)) → Small(b)

convert to TFF

(A ∧ B) → A *tautology

Logical & tautological *consequence*:

∀x (¬Tet(x) → Small(x))	A
¬Tet(a)	B
Small(a)	C

∀x ¬Tet(x) → Small(a)	A → B
∀x ¬Tet(x)	A
Small(a)	B

With both arguments in their original forms we can see the conclusion is a **logical** consequence of the premises.

However, when we convert the arguments to TFF, we can still see the consequence relation only with the second argument, so only the second argument involves

Logical & tautological *equivalence*:

¬∃x (Small(x) v Large(x)) □ ¬∃x Small(x) ∧ ¬∃x Large(x)

Can see the equivalence in both originals

¬A □ ¬B ∧ ¬C

CANNOT see the equivalence in TFF

¬ (∃x Small(x) v ∃x Large(x)) □ ¬∃x Small(x) ∧ ¬∃x Large(x)

CAN see the equivalence in TFF

¬(A v B) □ ¬A ∧ ¬B

Similarly, we can see from their original forms that each of these pairs of sentences is a **logical equivalence** . However, once we convert each pair of sentences into TFF, we can still see the equivalence relation only with the second pair of sentences, proving that only this second pair exhibits **tautological equivalence**.