Elimination of Connectives

In classical propositional logic, the connectives =, ∨, ¬ can be replaced by ⟶, ∧, False. Define corresponding simplification rules as lemmas and prove their correctness. (You may use automated proof tactics.)

lemma `equiv_conel: "(A = B) = ((A ⟶ B) ∧ (B ⟶ A))"`
  by `iprover`

lemma `or_conel: "(A ∨ B) = (¬ (¬ A ∧ ¬ B))"`
  by `blast`

lemma `not_conel: "(¬ A) = (A ⟶ False)"`
  by `blast`

What is the result of your translation for the formula `A ∨ (B ∧ C) = A`? (You can use Isabelle's simplifier to compute the result by using the simplifier's `only` option.)

Stating `A ∨ (B ∧ C) = A` as a lemma and application of
`(simp only: equiv_conel or_conel not_conel)`
results in the simplified goal
`(A ⟶ False) ∧ ((B ∧ C ⟶ A) ∧ (A ⟶ B ∧ C) ⟶ False) ⟶ False`.