

In-Class Worksheet

Discrete Math & Functional Programming— CSCI 054— Spring 2025

Instructor: Osborn

For each expression below, write an equivalent one that is simpler.

`a && not a`

`a || (not a && b)`

`(not a || b) && (not b || c) &&
(not c || not a) && (not c || not b)`

`1 + 1 = 2` implies that `2 + 3 = 5`

`1 + 1 = 2` implies that `2 + 3 = 6`

`1 + 1 = 3` implies that `2 + 3 = 5`

`1 + 1 = 3` implies that `2 + 3 = 6`

A password is valid only if it is at least 8 characters long, is not one that you have used previously, and contains at least 2 of the following: a number, a lowercase character, an uppercase character.

Is the following statement a tautology? a contradiction? satisfiable? falsifiable?

$$p \vee q \Rightarrow \neg p \wedge \neg q$$