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CSC 1300

1. a) For all natural numbers n, if n is solitary, then it is prime. (converse)

There exists a natural number n where if n is not solitary, then n is is not prime. (contrapositive)

b) There exists a natural number n where if n is not prime, then n is not solitary.

You would have to prove that there is no natural number n where n is not prime and not solitary.

c) The statement is true because 10 is not a prime number, making the hypothesis false. Because the hypothesis is false, it is irrelevant what the conclusion is, as the whole statement is automatically true.

d) This tells me nothing about the original statement, as 8 is not prime and therefore the statement is automatically true. Also, it says $\forall n \in \mathbb{N}$, so you would have to check all n. It tells us that the converse is false because 8 is solitary but not prime, and the statement uses $\forall$. It tells us nothing about the contrapositive for similar reasons as the original