3 suspects in a crime make the following statements.
Exactly one of them is telling the truth.

- Suspect A: I am innocent
- Suspect B: Suspect C is guilty
- Suspect C: I am innocent

Who is telling the truth, and who is guilty of the crime?

Let the boolean variables A, B, and C denote whether the corresponding suspect is guilty (true) or innocent (false).

Only one of the three variables can be true.

Suspect A: I am innocent
Suspect B: Suspect C is guilty
Suspect C: I am innocent

If suspect A is telling the truth, this means:

$(\neg A \wedge \neg C \wedge \neg\neg C) = \text{True}$

But it is not possible for $\neg C \wedge \neg\neg C = \neg C \wedge C$ to be true (contradiction)

If suspect B is telling the truth, this means:

$(C \wedge \neg\neg A \wedge \neg\neg C) = \text{True}$

But this can only be true if C and A are both true, but the problem states that only one variable can be true.

Let the boolean variables A, B, and C denote whether the corresponding suspect is guilty (true) or innocent (false).

Only one of the three variables can be true.

Suspect A: I am innocent
Suspect B: Suspect C is guilty
Suspect C: I am innocent

If suspect C is telling the truth, this means:

$(\neg C \wedge \neg C \wedge \neg\neg A) = \text{True}$

This can be simplified as: $(\neg C \wedge A)$.

There is no contradiction with this statement. This means Suspect C is telling the truth.

In order for Suspect C's statement to be True, the variable A must be True. In other words, Suspect A is guilty (and Suspects B and C are innocent).