

3.3 PROJECT

THE CASE OF DESCARTES

The French mathematician and philosopher René Descartes (1596–1650) famously wrote “cogito, ergo sum,” which is Latin for the well-known philosophical statement, “I think, therefore I am.” He wrote this sentence when studying a place of deep questioning in the human mind.

Descartes’ work is of great importance in Western thinking, and it is widely studied in academia. To lighten their studies up a little, many mathematics and philosophy students are told the following joke.

René Descartes is having dinner and has just finished his drink. The server asks him if he would like another. Descartes replies, “I do not think so,” and disappears in a puff of smoke.

While a witty one, the joke’s punch line may not be mathematically correct.

1. Rewrite Descartes’ statement as a conditional (if-then) statement.
2. Let p be the statement “I think” and q be the statement “I am.” Complete the truth table.

p	q	$\sim p$	$\sim q$	$p \Rightarrow q$	$\sim p \Rightarrow \sim q$
T	T	F	F	T	T
T	F	F	T	F	F
F	T	T	F	T	T
F	F	T	T	T	T

3. Write the conditional $\sim p \Rightarrow \sim q$ as a sentence in English.
4. Are $p \Rightarrow q$ and $\sim p \Rightarrow \sim q$ logically equivalent? Explain.
5. Use your previous answers to explain why the punch line for the joke does not really work.