

COURSE: DISCRETE MATHEMATICS

Exercise 1.1

Question no: 50

Question:

An ancient Sicilian legend says that the barber in a remote town who can be reached only by traveling a dangerous mountain road shaves those people, and only those people, who do not shave themselves. Can there be such a barber?

Answer: If we assume p as “Barber shaves the persons” & q as “People who do not shave themselves”, then the statement becomes “Barber shaves them if and only if the people do not shave themselves” which can be expressed as $p \leftrightarrow q$.

If such a barber existed, who would shave the barber? If the barber shaved himself, then he would be violating the rule that he shaves only those people who do not shave themselves. On the other hand, if he does not shave himself, then the rule says that he must shave himself. Neither is possible, so there can be no such barber.

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