

Assignment – Discrete Mathematics

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Chapter: 1, Section: 1

Problem No 9

Question

Let p and q be the propositions “Swimming at the New Jersey shore is allowed” and “Sharks have been spotted near the shore,” respectively. Express each of these compound propositions as an English sentence.

- a) $\neg q$
- b) $p \wedge q$
- c) $\neg p \vee q$
- d) $p \rightarrow \neg q$
- e) $\neg q \rightarrow p$
- f) $\neg p \rightarrow \neg q$
- g) $p \leftrightarrow \neg q$
- h) $\neg p \wedge (p \vee \neg q)$

Answer

- a) No shark has been spotted near the shore.
- b) Swimming at the New Jersey shore is allowed but sharks have been spotted near the shore.
- c) Swimming at the New Jersey shore is not allowed or sharks have been spotted near the shore.
- d) If swimming at the New Jersey shore is allowed then no shark has been spotted near the shore.
- e) If no shark has been spotted near the shore then swimming at the New Jersey shore is allowed.
- f) If swimming at the New Jersey shore is not allowed then no sharks have been spotted near the shore.
- g) Swimming at the New Jersey shore is allowed if and only if no shark has been spotted near the shore.
- h) Swimming at the New Jersey shore is not allowed and either swimming at the New Jersey shore is allowed or sharks have not been spotted near the shore.