Assignment 7

Due December 4, 11:59pm

Problem 1

Consider the following two statements:

\[ p: \text{It is Friday.} \]
\[ q: \text{I go to class.} \]

Express the following in plain English.

a. \( p \Rightarrow q \)
b. \( (\neg p) \Rightarrow (\neg q) \)
c. \( p \lor (\neg q) \)
d. \( p \land q \)

Problem 2

Formalize the following English sentences in propositional logic, using the provided propositional letters:

a. If you're not satisfied, you get your money back.
   
   \[ s: \text{You are satisfied.} \]
   \[ m: \text{You get your money back.} \]

b. No shirt, no shoes, no service.
   
   \[ i: \text{You wear a shirt.} \]
   \[ o: \text{You wear shoes.} \]
   \[ e: \text{You are served.} \]

Problem 3

Consider the following two statements:

\[ s: \text{There is smoke.} \]
\[ f: \text{There is fire.} \]

Decide whether each of the following is a tautology, a contradiction, or contingent, and describe why.

a. \( s \Rightarrow s \)
b. \( s \Rightarrow f \)
c. \( s \land \neg s \)
d. \( s \lor f \lor \neg f \)