Homework 2

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Knowledge Representation

It is not cloudy and it is not raining.
Let p = "It is not cloudy", and let q = "It is raining", then:
$\neg p \rightarrow \neg p$

I like to eat apples and bananas.
Let p = "I like to eat apples", and let q = "I like to eat bananas", then:
$p \rightarrow q$

Behind the clouds the sun is shining.
Let p = "Behind the clouds", and let q = "The sun is shining", then:
pq

If a function is differentiable then the function is continuous.
Let p = "A function is differentiable", and let q = "The function is continuous", then:
(p $\rightarrow q$)

I will study for the final otherwise I will fail.
$Let p = "I will study for the final", and let q = "I will fail", then:$
$p \vee q$

Equivalence in Propositional Logic

$p \wedge q$ *and* $p \vee \neg q$
These two are not equivalent because they don't match in truth tables.

$p \vee q$ *and* $\neg p \vee \neg q$

These two are not equivalent.

$p \rightarrow q$ *and* $\neg p \rightarrow \neg q$

These two are not equivalent.

$p \rightarrow q \; and \; \neg p \vee q$

These two are equivalent.

$\neg(p \wedge q) \; and \; \neg p \vee \neg q$

These two are not equivalent.