Name: _____

Quiz 5 ♠

MATH 211
February 2, 2023

1. Complete the truth tables.

(a)

P	Q	$P \vee Q$
T	T	
T	F	
F	T	
F	F	

(b)

P	Q	$P \wedge Q$
T	T	
T	F	
F	T	
F	F	

(c)

P	Q	$P \Rightarrow Q$
T	T	
T	F	
F	T	
F	F	

(d)

P	Q	$P \Leftrightarrow Q$
T	T	
T	F	
F	T	
F	F	

2. Without changing its meaning, convert each sentence to a sentence of form "If P, then Q."

   (a) Whenever a number is divisible by 4, it is even.

   (b) A function is continuous provided that it is differentiable.

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(a)

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T	F	
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F	F	

(b)

P	Q	$P \vee Q$
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P	Q	$P \wedge Q$
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F	T	
F	F	

(d)

P	Q	$P \Leftrightarrow Q$
T	T	
T	F	
F	T	
F	F	

2. Without changing its meaning, convert each sentence to a sentence of form "If P, then Q."

   (a) You use an umbrella only if it is raining.

   (b) Whenever you are lost, consult a map.

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Quiz 5 ♣

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P	Q	$P \vee Q$
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T	F	
F	T	
F	F	

(d)

P	Q	$P \Leftrightarrow Q$
T	T	
T	F	
F	T	
F	F	

2. Without changing its meaning, convert each sentence to a sentence of form "If P, then Q."

   (a) The quadratic formula applies provided that you are solving a quadratic equation.

   (b) Work carefully whenever you take a quiz.

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(b)

P	Q	$P \wedge Q$
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(c)

P	Q	$P \Rightarrow Q$
T	T	
T	F	
F	T	
F	F	

(d)

P	Q	$P \Leftrightarrow Q$
T	T	
T	F	
F	T	
F	F	

2. Without changing its meaning, convert each sentence to a sentence of form "If P, then Q."

   (a) For a number to be even, it is sufficient that it be a multiple of 4.

   (b) Whenever the derivative of a function is zero, the function is a constant function.