Logic, First Course, Winter 2020. Week 1, Lecture 2, Handout.

Example 1

¬(p ∨ q)

p q	¬	(	p	∨	q	)
T T	[ ]	T	[ ]	[ ]	T	[ ]
T F	[ ]	T	[ ]	[ ]	F	[ ]
F T	[ ]	F	[ ]	[ ]	T	[ ]
F F	[ ]	F	[ ]	[ ]	F	[ ]

Check

Example 2

¬(p ∧ q)

p	q	¬	(	p	∧	q	)
T	T	[◇]	T ◇	[◇]	T ◇		
T	F	[◇]	T ◇	[◇]	F ◇		
F	T	[◇]	F ◇	[◇]	T ◇		
F	F	[◇]	F ◇	[◇]	F ◇		

Check

Example 3

(¬p ∧ ¬q)

p	q	(	¬	p	∧	¬	q	)
T	T	[◇]	T ◇	[◇]	[◇]	T ◇		
T	F	[◇]	T ◇	[◇]	[◇]	F ◇		
F	T	[◇]	F ◇	[◇]	[◇]	T ◇		
F	F	[◇]	F ◇	[◇]	[◇]	F ◇		

Check

Example 4

(¬p ∨ ¬q)

p	q	(	¬	p	∨	¬	q	)
T	T		[ ]	[T]	[ ]	[ ]	[T]	
T	F		[ ]	[T]	[ ]	[ ]	[F]	
F	T		[ ]	[F]	[ ]	[ ]	[T]	
F	F		[ ]	[F]	[ ]	[ ]	[F]	

Check

Example 5

(p → ¬q)

p	q	(	p	→	¬	q	)
T	T		[T]	[ ]	[ ]	[T]	
T	F		[T]	[ ]	[ ]	[F]	
F	T		[F]	[ ]	[ ]	[T]	
F	F		[F]	[ ]	[ ]	[F]	

Check

Example 6

((p ∧ q) ∨ (p ∨ q))

p q	((	p	∧	q	) ∨ (	p	∨	q	))
T T		T ⇕	⇕	T ⇕	⇕	T ⇕	⇕	T ⇕	
T F		T ⇕	⇕	F ⇕	⇕	T ⇕	⇕	F ⇕	
F T		F ⇕	⇕	T ⇕	⇕	F ⇕	⇕	T ⇕	
F F		F ⇕	⇕	F ⇕	⇕	F ⇕	⇕	F ⇕	

Check

Example 7

(p → (q ∨ r))

p q r	(	p	→	(q	∨	r))
T T T		T ⇕	⇕	T ⇕	⇕	T ⇕
T T F		T ⇕	⇕	T ⇕	⇕	F ⇕
T F T		T ⇕	⇕	F ⇕	⇕	T ⇕
T F F		T ⇕	⇕	F ⇕	⇕	F ⇕
F T T		F ⇕	⇕	T ⇕	⇕	T ⇕
F T F		F ⇕	⇕	T ⇕	⇕	F ⇕
F F T		F ⇕	⇕	F ⇕	⇕	T ⇕
F F F		F ⇕	⇕	F ⇕	⇕	F ⇕

Check

These is a handout written for Logic, First Course, Winter 2020. It is run on the Carnap software, which is an:

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