

MTH001 Assignment 1 Solution Fall 2022

Question No. 1:

Verify by using the laws of logic whether the following statement is a Tautology or not:

$$\sim(\sim q \rightarrow p) \rightarrow \sim q$$

Solution:

$$\begin{aligned} & \sim(\sim q \rightarrow p) \rightarrow \sim q \\ & \sim(q \vee p) \rightarrow \sim q \\ & \sim\{\sim(q \vee p)\} \vee \sim q \\ & (q \vee p) \vee \sim q \\ & (p \vee q) \vee \sim q \\ & p \vee (q \vee \sim q) \\ & p \vee t \\ & t \end{aligned}$$

Question 2

Solution:

P	q	r	$p \rightarrow q$	$p \vee r$	r
T	T	T	T	T	T
T	T	F	T	T	F
T	F	T	F	T	T
T	F	F	F	T	F
F	T	T	T	T	T
F	T	F	T	F	F
F	F	T	T	T	T
F	F	F	T	F	F