

Math 2326 - Introduction to Abstract Mathematics
Assignment 1 - Due Friday, January 18

Problem 1: Which of the following are mathematical statements?

a. $a^2 + b^2 = c^2$.

b. $\int_0^{\infty} \frac{dx}{x^2}$

c. Every even integer is divisible by 4.

d. 14 is equal to the product of three integers.

e. πr^2

Problem 2: Let P and Q be statements.

a. If the statements “ P implies Q ” and P are both true, what can you conclude about Q ?

b. If the statements “ P implies Q ” and “not Q ” are both true, what can you conclude about P ?

Problem 3: Complete the following truth table. What do you notice about the first and last columns?

P	not P	not(not P)
T		
F		

Problem 4: Complete the following truth table. What do you notice about the last two columns?

P	Q	not P	P implies Q	(not P) or Q
T	T			
T	F			
F	T			
F	F			

Problem 5: Complete the following truth table. What do you notice about the last two columns?

P	Q	not P	not Q	P or Q	not (P or Q)	(not P) and (not Q)
T	T					
T	F					
F	T					
F	F					

Problem 6: Complete the following truth table. What do you notice about the last two columns?

P	Q	R	P and Q	Q and R	P and (Q and R)	(P and Q) and R
T	T	T				
T	T	F				
T	F	T				
T	F	F				
F	T	T				
F	T	F				
F	F	T				
F	F	F				