

Problem 1

1 The Riemann Hypothesis is right
Proposition, either true or false

2 12 is a prime number
Proposition false

3 $x+y = 6$
Not proposition

4 What a beautiful flower!
Not proposition

5 3-1
Not proposition

6 Tom stays at home on weekends
Proposition either true or false

7 This sentence is wrong
Proposition false

Problem 2

1 cheese is gone \rightarrow Tome eats it or Jerry eats it
2 it rains \rightarrow Tom will go home

Problem 3

1 Tom is not a cat and Tom doesn't like eating fish
2 If Tom is a cat, Tom likes eating fish
3 Tom is not a cat and Tom doesn't like eating fish

Problem 4

P	Q	$P \rightarrow Q$	$(!Q) \rightarrow (!P)$	$(!P) \text{ or } Q$	$(!P) \rightarrow (!Q)$
True	True	True	True	True	True
True	False	False	False	False	True
False	False	True	True	True	True
False	True	True	True	True	False

P	Q	R	$P \rightarrow Q$	$Q \rightarrow R$	$P \rightarrow R$	$(Q \rightarrow R) \rightarrow (P \rightarrow R)$	$(P \rightarrow Q) \rightarrow ((Q \rightarrow R) \rightarrow (P \rightarrow R))$
True	True	True	True	True	True	True	True
True	True	False	True	False	False	True	True
True	False	True	False	True	True	True	True
True	False	False	False	True	False	False	True
False	True	True	True	True	True	True	True
False	True	False	True	False	True	True	True
False	False	True	True	True	True	True	True
False	False	False	True	True	True	True	True