

Kennesaw State University
College of Computing and Software Engineering
Department of Computer Science
Mathematical Structures for Computer Science
CS5070 Assignment 1

1. If $P(x) = 7x + 3$ is even:
 - (a) Find values of n for $P(x)$ true
 - (b) With universal and existential quantifiers write a mathematical expression that defines two complete predicates
2. Write the complete mathematical logical expression of the following:
there is an odd number between any two even numbers
3. Write the complete mathematical logical expression of the following
description: there is an even number between any two odd numbers
4. Write the complete mathematical logical expression of the following
description: there is no number between any two consecutive numbers
5. Write the complete mathematical logical expression of the following
informal description: If P is in set A , then Q is in set B . If Q is not
in set B , then P is in set A . Therefore, P is not in set A or Q is not
in set B .
6. Construct a truth table of the resulting logical expression.
7. Use a truth table to prove or disprove the following expression:

$$\neg(P \wedge (Q \vee R)) = \neg P \vee (\neg Q \vee \neg R)$$