FCS152 Tutorial 5
Set Theory

1. List the elements of the following sets; here **N** = {1, 2, 3,…}
   (a) A={x: x∈N, 3<x<13}
   (b) B={x: x∈N, x is even, x<15}
   (c) C={x: x∈N, 4+x=3}

2. Write each of the following sets in the form {x | P(x)}:
   (a) {January, February, May, July}
   (b) {a, aba, ababa, abababa, …}
   (c) {…, 1/8, 1/4, 1/2, 1, 2, 4, 8, …}

3. Given two sets A={a, {a}}, B={a, b, {a, b}}. Determine A∩B, A∪B, P(A), B∩P(A), A×B.

4. Which of the following is true for all sets A, B and C? Prove or give a counter-example.
   (a) A∩B=B∩A
   (b) (A-B) ∩C=(A∩C)-B
   (c) (A-B)-C=A-(B-C)

5. Prove by induction on the size of the set, that the power set *P(A)* has cardinality $2^{|A|}$.