Finite Math
section 6.1  Sets
Terms:   set, roster notation of a set, set builder notation of a set, elements, equal sets, empty set, subset, proper subset, union of sets, intersection of sets, universal set, complement of a set, disjoint sets.

Basic number sets and their notations.
(1)  \( \mathbb{N} \) = set of natural numbers = \( \{1, 2, 3, 4, 5, \ldots\} \)
(2)  \( \mathbb{Z} \) = set of integers = \( \{\ldots, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, \ldots\} \)

Ex1, Let \( A = \{x | x \text{ is a multiple of 3 and } x \text{ is less than 10}\} \)
Express set \( A \) in roster notation.

Ex2, Let \( B = \{x | x = 3k \text{ where } k \in \mathbb{N}, \ k < 10\}\)  (a) Express set \( B \) in roster notation.
(b) Is 5 \( \in \) \( B \)?  (c) Is 6 \( \in \) \( B \)?  (d) Is \( \{3, 6, 9\} \subset \) \( B \)?  (e) Is \( \{3, 4\} \subset \) \( B \)?

Ex3, Let \( C = \{x | x = 2n^2 - 1 \text{ where } n \in \mathbb{N}, \ x < 20\} \) Express set \( C \) in roster notation.

Ex4, Let \( A = \{1, 2, 3\} \). Write all subsets of \( A \).  Note: 1 \( \in \) \( B \), but \( \{1\} \subset \) \( \{1, 2, 3\}\)

Ex5, Let \( A = \{1, 2, 3, 4\}, \ B = \{3, 4, 5, 6, 7\}, \ C = \{2, 9\}, \universal set \) \( U = \{n | n \in \mathbb{N}, \ n < 10\} \)
Find  (a) \( A \cap B \)  (b) \( A \cup B \)  (c) \( A' \)  (d) \( B \cap C \)  (e) \( A \cap B' \)
(f) \( A' \cup B' \)  (g) \( (A \cap B)' \)  (h) \( A' \cap B \)  (i) \( (A \cup B)' \)  (j) \( A' \cap A \)  (k) \( A' \cup A \)
(l) Write DeMorgan's Law.