Revision Topic 6
Set Language And Matrices

Integrated Examples

Example 1 Suppose $\varepsilon = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$,
$A = \{x: x \text{ is a factor of } 24\}$,
$B = \{x: x \text{ is an odd integer}\}$.

(a) List the elements of the set
(i) A,
(ii) $A \cap B$.

(b) Find $n(A \cup B')$.

(c) Draw a Venn diagram to represent the sets ε, A and B.

(d) Find $n[(A \cup B)']$.

(e) If $t \in B$ and t is a root of $2x^2 - 5x - 3 = 0$, find the value of t.

Solution

(a) (i) Since $1 \times 24 = 2 \times 12 = 3 \times 8 = 4 \times 6 = 24$,

$A = \{x: x \text{ is a factor of } 24\}$
$= \{1, 2, 3, 4, 6, 8\}$

(ii) $B = \{x: x \text{ is an odd integer}\}$
$= \{1, 3, 5, 7, 9\}$
$\therefore A \cap B = \{1, 3\}$

(b) $B' = \{2, 4, 6, 8\}$
$\therefore A \cup B' = \{1, 2, 3, 4, 6, 8\}$
$n(A \cup B') = 6$

(c) The required Venn diagram is as shown below.