

$$1) i) A = \{x : x < 2\}$$

$$\{-7, -3, -1, 0\}$$

$$ii) \{-3, -1, 0, 5\}$$

~~5) $A = \{x\}$~~

~~5) $\{x : x \in \mathbb{N} \text{ and } x < 20\}$~~

~~i) $A = \{x : x = 3p, p \in \mathbb{N}\}$~~

~~$\{x : x \in \mathbb{N} \text{ and } x < 20\}$~~

~~$\{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, \dots, 19\}$~~

$$i) A = \{x : x = 3p, p \in \mathbb{N}\}$$

$$x = 3p$$

$$\text{When } p = 1, \quad x = 3 \times 1 = 3$$

$$\text{When } p = 2, \quad x = 3 \times 2 = 6$$

$$\text{When } p = 3, \quad x = 3 \times 3 = 9$$

$$\text{When } p = 4, \quad x = 3 \times 4 = 12$$

$$\text{When } p = 5, \quad x = 3 \times 5 = 15$$

$$\text{When } p = 6, \quad x = 3 \times 6 = 18$$

$$A = \{3, 6, 9, 12, 15, 18\}$$

$$ii) B = \{y : y = 2n + 3, n \in \mathbb{N}\}$$

$$y = 2n + 3$$

$$\text{When } n = 1, \quad y = 2 \times 1 + 3 = 5$$

$$\text{When } n = 2, \quad y = 2 \times 2 + 3 = 7$$

$$\text{When } n = 3, \quad y = 2 \times 3 + 3 = 9$$

$$\text{When } n = 4, \quad y = 2 \times 4 + 3 = 11$$

$$\text{When } n = 5, \quad y = 2 \times 5 + 3 = 13$$

$$\text{When } n = 6, \quad y = 2 \times 6 + 3 = 15$$

$$\text{When } n = 7, \quad y = 2 \times 7 + 3 = 17$$

$$\text{When } n = 8, \quad y = 2 \times 8 + 3 = 19$$

$$B = \{5, 7, 9, 11, 13, 15, 17, 19\}$$

iii) $C = \{x; x \text{ is divisible by } 4\}$
 $C = \{4, 8, 12, 16\}$

6) $\{x: x^2 - 9x - 10 = 0\}$

$$= x^2 - 9x - 10 = 0$$

$$= x^2 - 10x + x - 10 = 0$$

$$= x(x-10) + 1(x+10) = 0$$

$$= (x-10)(x+1) = 0$$

$$\text{either } x+1=0$$

$$x-10=0 \quad \text{or } x=-1$$

$$x=10$$

$$\{10, -1\}$$

$$\therefore \text{its proper subsets} = \emptyset, \{10\}, \{-1\}$$

7) i) $A \subset B$

False because every triangles are not isosceles.

ii) $B \subset A$

True because isosceles triangles are triangles

iii) $C \subset B$

True because every equilateral triangle are isosceles triangles.

iv) $B \subset A$

True, because isosceles triangle is one of the triangle.

v) $C \subset A$

True because every equilateral triangles are

triangles.

vi) $C \subset B \subset A$

True because every equilateral triangle is isosceles triangle and every isosceles triangle are one of the triangles.

8) i) $B \subset C$

False because every Rectangle are not squares.

ii) $D \subset B$

False because every Rhombus are not Rectangle.

iii) $C \subset B \subset A$

True because every square is a rectangle and every rectangle are quadrilaterals.

iv) $D \subset A$

True because Rhombus is one of the rectangle.

v) $B \supset C$

True because a square is a rectangle.

vi) $A \supset B \supset D$

False because Rhombus is not a rectangle.