Sets Ex 1.2 Q2(viii)

In set Builder form, a set is described by some characterizing property $P(x)$ of its elements x.

In this case a set can be described as $\{x : P(x) \text{ hold}\}$ or $\{x | P(x) \text{ holds}\}$ which is read as 'the set of all x such that $P(x)$ holds'.

The symbols ':' or 'I' is read as 'such that'.

$\because 5^1 = 5$

$\quad 5^2 = 25$

$\quad 5^3 = 125$

$\quad 5^4 = 625$

$\therefore$ The above set can be described as

$\quad \{x : x = 5^n, 1 \leq n \leq 4\}$

Sets Ex 1.2 Q3(i)

The integers whose squares are less than or equal to 10 are:

$$(-3)^2 = 9 < 10$$

$$(-2)^2 = 4 < 10$$

$$(-1)^2 = 1 < 10$$

$$0^2 = 0 < 10$$

$$1^2 = 1 < 10$$

$$2^2 = 4 < 10$$

$$3^2 = 9 < 10$$

The square of other integers are more than 10

Hence $A = \{0, \pm 1, \pm 2, \pm 3\}$

or

$\quad A = \{0, -1, -2, -3, 1, 2, 3\}$

Sets Ex 1.2 Q3(ii)

Let's find the values of $x = \dfrac{1}{2n-1}$, for $1 \le n \le 5$

for $n = 1$, $x = \dfrac{1}{1} = 1$

for $n = 2$, $x = \dfrac{1}{2 \times 2 - 1} = \dfrac{1}{4-1} = \dfrac{1}{3}$

for $n = 3$, $x = \dfrac{1}{2 \times 3 - 1} = \dfrac{1}{6-1} = \dfrac{1}{5}$

for $n = 4$, $x = \dfrac{1}{2 \times 4 - 1} = \dfrac{1}{8-1} = \dfrac{1}{7}$

for $n = 5$, $x = \dfrac{1}{2 \times 5 - 1} = \dfrac{1}{10-1} = \dfrac{1}{9}$

Hence, $B = \left\{ 1, \dfrac{1}{3}, \dfrac{1}{5}, \dfrac{1}{7}, \dfrac{1}{9}, \right\}$

Sets Ex 1.2 Q3(iii)

The integers which lie between $\dfrac{-1}{2}$ and $\dfrac{9}{2}$ are $0, 1, 2, 3, 4$

Hence $C = \{0, 1, 3, 4,\}$

********** END *********