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'.

$\because 5^1 = 5$

$5^2 = 25$

$5^3 = 125$

$5^4 = 625$

$\therefore$ The above set can be described as

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

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

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

Sets Ex 1.2 Q3(ii)

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

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

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

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

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

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

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

Sets Ex 1.2 Q3(iii)

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

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

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