Class 11 Solutions Chapter 2 Relations Ex 2.3 Q16

We have,

$A = \{1, 2, 3, 5\}$ and $B = \{4, 6, 9\}$

It is given that,

$R = \{(x, y) :$ the difference between x and y is odd, $x \in A,\ y \in B\}$

For the elements of the given sets A and B, we find that

$(1, 4) \in R,\ (1, 6) \in R,\ (2, 9) \in R,\ (3, 4) \in R,\ (3, 6) \in R,\ (5, 4) \in R$ and $(5, 6) \in R$

$\therefore \quad R = \{(1, 4),\ (1, 6),\ (2, 9),\ (3, 4),\ (3, 6),\ (5, 4),\ (5, 6)\}$

Hence, relation R in roster form is $\{(1, 4),\ (1, 6),\ (2, 9),\ (3, 4),\ (3, 6),\ (5, 4),\ (5, 6)\}$

Class 11 Solutions Chapter 2 Relations Ex 2.3 Q17

We have,

$R = \{(x, x^3) : x$ is a prime number less than $10\}$

For the elements of the given sets, we find that

$x = 2, 3, 5, 7$

$\therefore \quad (2, 8) \in R,\ (3, 27) \in R,\ (5, 125) \in R$ and $(7, 343) \in R$

$\therefore$ Relation R in roster form is $= \{(2, 8),\ (3, 27),\ (5, 125),\ (7, 343)\}$

Class 11 Solutions Chapter 2 Relations Ex 2.3 Q18

We have,

$A = \{1, 2, 3, 4, 5, 6\}$

and, $R = \{(a, b) : a,\ b \in A,\ b$ is exactly divisible by $a\}$

(i) Now, a/b stands for 'a divides b'. For the elements of the given sets A and A, we find that

$1/1,\ 1/2,\ 1/3,\ 1/4,\ 1/5,\ 1/6,\ 2/2,\ 2/4,\ 2/6,\ 3/3,\ 3/6,\ 4/4,\ 5/5,\ 6/6$

$\therefore$ Relation R in roster form is

$R = \{(1, 1),\ (1, 2),\ (1, 3),\ (1, 4),\ (1, 5),\ (1, 6),\ (2, 2),\ (2, 4),\ (2, 6),\ (3, 3),\ (3, 6),\ (4, 4),\ (5, 5),\ (6, 6)\}$

(ii) Domain $(R) = \{1, 2, 3, 4, 5, 6\}$

(iii) Range $(R) = \{1, 2, 3, 4, 5, 6\}$

Class 11 Solutions Chapter 2 Relations Ex 2.3 Q19

(i) Set builder form of the relation from P to Q is

$$R = \{(x, y) : y = x - 2,\ x \in P,\ y \in Q\}$$

(ii) Roster form of the relation from P to Q is

$$R = \{(5, 3),\ (6, 4),\ (7, 5)\}$$

$$\text{Domain}(R) = \{5, 6, 7\}$$

$$\text{Range}(R) = \{3, 4, 5\}$$

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