

Example 1.11

Let $A = \{1, 2, 3, 4\}$ and $B = \{2, 5, 8, 11, 14\}$ be two sets. Let $f: A \rightarrow B$ be a function given by $f(x) = 3x - 1$. Represent this function

- (i) by arrow diagram
- (ii) in a table form
- (iii) as a set of ordered pairs
- (iv) in a graphical form

Solution :

$$A = \{1, 2, 3, 4\}; B = \{2, 5, 8, 11, 14\}$$

$$f(x) = 3x - 1$$

$$f(1) = 3 \underline{\quad} - 1 = \underline{\quad} - 1 = 2$$

$$f(2) = 3 \underline{\quad} - 1 = \underline{\quad} - 1 = 5$$

$$f(3) = 3 \underline{\quad} - 1 = \underline{\quad} - 1 = 8$$

$$f(4) = 3 \underline{\quad} - 1 = \underline{\quad} - 1 = 11$$

(i) Arrow diagram

Let us represent the function $f: A \rightarrow B$ by

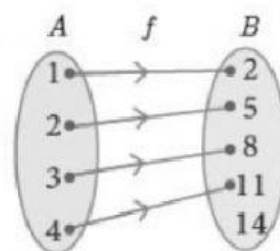
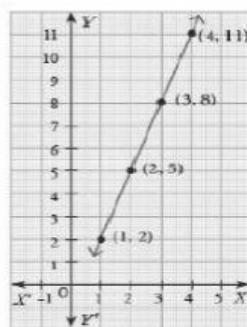
an arrow diagram

(iii) Set of ordered pairs

The function f can be represented as a set of ordered pair as

(iv) Graphical form

In the adjacent xy -plane the points $(1, 2), (2, 5), (3, 8), (4, 11)$ are plotted



$$f = \{(1, 2), (2, 5), (3, 8), (4, 11)\}$$

(ii) Table form

The given function f can be represented in a

tabular form as given below

x	1	2	3	4
$f(x)$	2	5	8	11



2. Let $f: A \rightarrow B$ be a function define by

$$f(x) = \frac{x}{2} - 1, \text{ where } A = \{2, 4, 6, 10, 12\},$$

$B = \{0, 1, 2, 4, 5\}$. Represent f by

(i) set of ordered pairs ; (ii) a table ;

(iii) an arrow diagram ; (iv) a graph

Solution :

Given

$$f(x) = \frac{x}{2} - 1$$

$$x = 2 \Rightarrow f(\underline{\quad}) = \frac{\quad}{2} - 1 = \underline{\quad} - 1 = 0$$

$$x = 4 \Rightarrow f(\underline{\quad}) = \frac{\quad}{2} - 1 = \underline{\quad} - 1 = 1$$

$$x = 6 \Rightarrow f(\underline{\quad}) = \frac{\quad}{2} - 1 = \underline{\quad} - 1 = 2$$

$$x = 10 \Rightarrow f(\underline{\quad}) = \frac{\quad}{2} - 1 = \underline{\quad} - 1 = 4$$

$$x = 12 \Rightarrow f(\underline{\quad}) = \frac{\quad}{2} - 1 = \underline{\quad} - 1 = 5$$

(i) Set of order pairs :

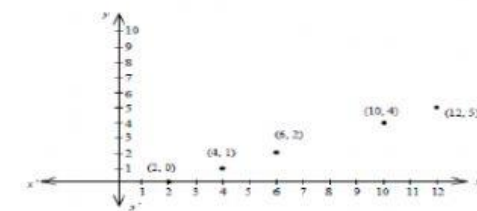
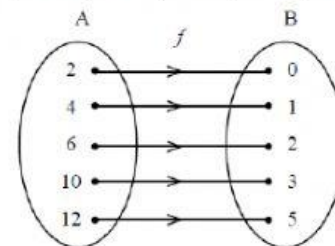
(ii) Table :

(iii) Arrow diagram :

(iv) Graph

$$f = \{(2, 0), (4, 1), (6, 2), (10, 4), (12, 5)\}$$

x	2	4	6	10	12
$f(x)$	0	1	2	4	5



3. Represent the function $f = \{(1, 2), (2, 2), (3, 2), (4, 3), (5, 4)\}$ through (i) an arrow diagram (ii) a

table form (iii) a graph

Solution :

(i) Arrow Diagram :

(ii) Table Form :

(iii) Graph :



x	1	2	3	4	5
$f(x)$	2	2	2	3	4

