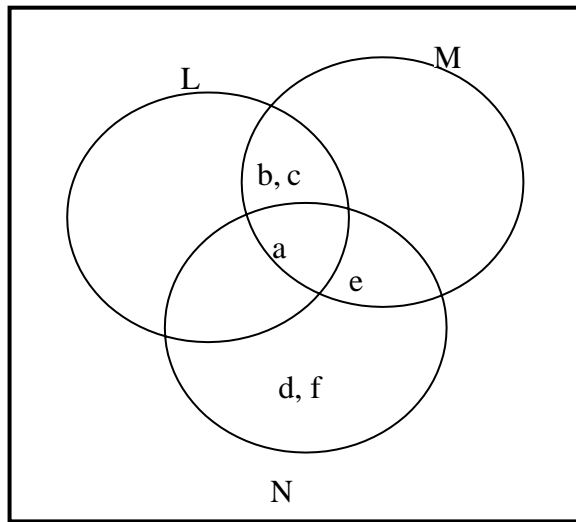


$$U = \{a, b, c, d, e, f, g, h, i, j\}$$



$$i) M \cup N = \{b, c, a, e\} \cup \{a, d, e, f\}$$

$$= \{a, b, c, d, e, f\}$$

$$ii) L \cup N = \{a, b, c\} \cup \{a, d, e, f\}$$

$$= \{a, b, c, d, e, f\}$$

$$iii) L \cap M \cap N = \{a\}$$

$$iv) L \cap M \cap N = \{a\}$$

$$v) (L \cup M \cup N) \cap I = \{g, h, i, j\}$$

$$vi) M \cap N = \{a, e\}$$

-5   -4   -3   -2   -1   -5   -1   -2   -3   -4   -5

From the graph, note that for  $y=x^2$ , there is no gap.

Examples of discrete functions are

- 1)  $y = x$  where  $x =$  number of children in a household
- 2)  $y = x$  where  $x =$  number of typographical errors in a textbook.

### Step Function

This is a function which takes a constant value for a given range of the independent variable, then the constant changes to another value for another range and so on e.g. fixed cost of production for increasing capacity.

e.g. The following function can be plotted graphically as follows:

Production level (Units) Fixed cost ( Sh)

1 -	100	1000	
101 -		1000	3000
1001 -	3000	4000	

Substituting:

$$1) \quad 5 = a - 3b$$

$$2) \quad 2 = a - 2b$$

$$3) \quad = (1) - (2):$$

$$3 = -b \quad b = -3$$

Using equation (1):

$$4 = a - 3(-3)$$

$$5 = a + 9 \Rightarrow a = 5 - 9$$

$$a = -4$$

Hence, equation is  $y = -4 - 3x$

3. What is the straight line which has slope  $b = -0.5$  and goes through  $(x, y) = (10, 18)$ ?

Solution:

$$Y = a + bx$$

$$18 = a - 0.5(10)$$

$$18 = a - 5 \quad a = 18 + 5; \quad a = 23$$

**Equation**  $y = 23 - 0.5x$