

Exercise 1.1

Q.1 Find the order of the following matrices.

$$A = \begin{bmatrix} 2 & 3 \\ -5 & 6 \end{bmatrix}$$

It has 2 rows & 2 columns that's why its order is 2 - by -2

$$B = \begin{bmatrix} 2 & 0 \\ 3 & 5 \end{bmatrix}$$

It has 2 rows & 2 columns. So, its order is 2- by -2

$$C = [2 \quad 4]$$

It has 1 row and 2 columns. So, its order is 1 - by -2

$$D = \begin{bmatrix} 4 \\ 0 \\ 6 \end{bmatrix}$$

It has 3 rows and 1 column. So, its order is 3 - by -1

$$E = \begin{bmatrix} a & d \\ b & e \\ c & f \end{bmatrix}$$

It has 3 rows and 2 columns. So, its order is 3 - by -2

$$F = [2]$$

It has 1 row & 1 column. So, its order is 1- by -1

$$G = \begin{bmatrix} 2 & 3 & 0 \\ 1 & 2 & 3 \\ 2 & 4 & 5 \end{bmatrix}$$

It has 3 rows and 3 columns. So, its order is 3 -by -3

$$H = \begin{bmatrix} 2 & 3 & 4 \\ 1 & 0 & 6 \end{bmatrix}$$

It has 2 rows & 3 columns. So, its order is 2- by -3

Q.2 Which one of the following matrices are equal?

1) $A = [3]$, 2) $B = [3 \quad 5]$,

3) $C = [5-2]$ 4) $D = [5 \quad 3]$

5) $E = \begin{bmatrix} 4 & 0 \\ 6 & 2 \end{bmatrix}$ 6) $F = \begin{bmatrix} 2 \\ 6 \end{bmatrix}$

7) $G = \begin{bmatrix} 3-1 \\ 3+3 \end{bmatrix}$ 8) $H = \begin{bmatrix} 4 & 0 \\ 6 & 2 \end{bmatrix}$

9) $I = [3 \quad 3+2]$ 10) $J = \begin{bmatrix} 2+2 & 2-2 \\ 2+4 & 2+0 \end{bmatrix}$

Solution:

Order of $A = [3]$ is equal to Order of $C = [5-2]$

Order of $B = [3 \quad 5]$ is equal to Order of $I = [3 \quad 3+2]$

Order of $C = [5-2]$ is equal to Order of $A = [3]$

$D = [5 \quad 3]$ has no equal matrix.

$E = \begin{bmatrix} 4 & 0 \\ 6 & 2 \end{bmatrix}$ has equal matrices.

Order of $\Rightarrow H = \begin{bmatrix} 4 & 0 \\ 6 & 2 \end{bmatrix}$ is equal to Order of $J = \begin{bmatrix} 2+2 & 2-2 \\ 2+4 & 2+0 \end{bmatrix}$

Order of $F = \begin{bmatrix} 2 \\ 6 \end{bmatrix}$ is equal to Order of $G = \begin{bmatrix} 3-1 \\ 3+3 \end{bmatrix}$

Q.3 Find the values of a, b, c & d.

$$\begin{bmatrix} a+c & a+2b \\ c-1 & 4d-6 \end{bmatrix} = \begin{bmatrix} 0 & -7 \\ 3 & +2d \end{bmatrix}$$

Solution:

As Matrices are equal so their corresponding entries are same.

$$a + c = 0 \rightarrow (1)$$

$$a + 2b = -7 \rightarrow (2)$$

$$c - 1 = 3 \rightarrow (3)$$

$$4d - 6 = +2d \rightarrow (4)$$

Solving 3rd equation

$$c - 1 = 3$$

$$c = 3 + 1$$

$$c = 4$$

Solving 2nd equation

$$a + 2b = -7$$

$$-4 + 2b = -7$$

$$2b = -7 + 4$$

$$2b = -3$$

$$b = \frac{-3}{2}$$

Solving 1st equation

$$a + c = 0$$

$$a + 4 = 0$$

$$a = -4$$

Solving 4th equation

$$4d - 6 = 2d$$

$$-6 = 2d - 4d$$

$$-6 = -2d$$

$$d = \frac{-6}{-2}$$

$$d = 3$$