Exercise 1.1

Q. 1: Find the order of the following matrices:

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

No of Rows in Matrix A = m = 2

No of Columns in Matrix A = n = 2

Order of Matrix A = m by n

= 2 by 2

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

No of Rows in Matrix B = m = 2

No of Columns in Matrix B = n = 2

Order of Matrix B = m by n

= 2 by 2

C = $\begin{bmatrix} 2 & 4 \end{bmatrix}$

No of Rows in Matrix C = m = 1

No of Columns in Matrix C = n = 2

Order of Matrix C = m by n

= 1 by 2

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

No of Rows in Matrix D = m = 3

No of Columns in Matrix D = n = 1

Order of Matrix D = m by n

= 3 by 1

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

No of Rows in Matrix E = m = 3

No of Columns in Matrix E = n = 2

Order of Matrix E = m by n

= 3 by 2

F = $\begin{bmatrix} 2 \end{bmatrix}$

No of Rows in Matrix F = m = 1

No of Columns in Matrix F = n = 1

Order of Matrix F = m by n

= 1 by 1

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

No of Rows in Matrix G = m = 3

No of Columns in Matrix G = n = 3

Order of Matrix G = m by n

= 3 by 3

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

No of Rows in Matrix H = m = 2

No of Columns in Matrix H = n = 3

Order of Matrix H = m by n

= 2 by 3

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

Solution:

A = C As $A = [3]$ and $C = [5 - 2]$

B = I As $B = [3 \quad 5]$ and $I = [3 \quad 3 + 2]$

E = H = J As $E = \begin{bmatrix} 4 & 0 \\ 6 & 2 \end{bmatrix}$ and $H = \begin{bmatrix} 4 & 0 \\ 6 & 2 \end{bmatrix}$ and $J = \begin{bmatrix} 2+2 & 2-2 \\ 2+4 & 2+0 \end{bmatrix}$

F = G As $F = \begin{bmatrix} 2 \\ 6 \end{bmatrix}$ and $G = \begin{bmatrix} 3-1 \\ 3+3 \end{bmatrix}$

Q. 3: Find the values of a, b, c and d which satisfies the matrix equation.

Solution:

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

a + c = 0 ---------- i

a + 2b = -7 ----------ii

c – 1 = 3 ----------iii

4d – 6 = 2d ----------iv

From Equ iii

c – 1 = 3

c = 3+1 So, c = 4

From Equ iv

4d – 6 = 2d

4d - 2d = 6

2d = 6

$d = \frac{6}{2} = 3$ So, d = 3

From Equ i

a + c = 0

$a + 4 = 0$ as, $c = 4$

$a = -4$ So, $a = -4$

From Equ ii

$a + 2b = -7$

$-4 + 2b = -7$ as, $a = -4$

$2b = -7 + 4$

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