ASSIGNMENT 4

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Question:

Assume X,Y,Z,W and P are matrices of orders (2 x n), (3 x k), (2 x p),(n x 3) and (p x k) respectively.

The restriction on n,k and p so that PY+WY will be defined are:

a. k=3 and p=n.

b. k is arbitrary and p=2.

c. p is arbitrary and k= 3.

d. k=2 and p=3.

Sol:

We know that

$$\text{order of P} = (\text{p x k})$$
$$\text{order of y} = (\text{3 x k})$$
$$\text{order of W} = (\text{n x 3})$$

Therefore for PY to exist,

The number of columns in matrix P should be equal to number of rows in matrix Y.

Therefore,

$$k = 3$$

Also number of columns in matrix W = number of rows in matrix Y

Therefor WY will exist

Also,

$$\text{Order of PY} = (\text{p x k})$$
$$\text{Order of WY} = (\text{n x k})$$

Now in order for PY + WY to exist,

The Order of PY must be equal to order of WY

Therefore

$$(p \times k) = (n \times k)$$

which implies that p = n

Hence for PY + WY to exist,

p=n and k=3