---------------------------------Chapter – 1 (Matrix)----------------------------------

1. Exchange rules for multiplication in case of matrix –

Hints:

1. Not applicable (ans.)
2. Applicable
3. One row will be larger than the other
4. None

Prove:

1. What is determinants?

Hints:

1. Number of square matrix written in a particular form (ans.)
2. Number of matrix written in a particular form
3. coefficient
4. Unexceptional Matrix

Prove:

1. What is the highest degree of determinant in both the quantity and coefficient of any of the n size determinants?

Hints:

1. (n – 1) (ans.)
2. (n+1)
3. (n – 1)2
4. (1 – n)

Prove:

1. As well as exchanging two rows or columns each other's space, the determinant found is the value of -

Hints: = Determinants

1. Inverse marked number-index value (ans.)
2. Positive
3. Negetive
4. Marked number index value

Prove:

The value of the new determinant found when two rows or columns exchange space in addition to one determinant will be equal to the number-index value of the given determinant but will be marked opposite.

Means, If the value of the given determinant is , the value of the new determinant will be

Suppose, Given determinants, = and

New Determinant, =

Now, a1(b2c3 – b3c2) - b1(a2c3 – a3c2) + c1(a2b3 – a3b2)

= -

= -

Therefore, =

1. What will be the value of a determinant if two rows or columns are similar?

Hints: = Determinants

1. (ans.)
2. -1
3. 1
4. ∞

Prove:

Here,

= = 0 [ Two columns are similar ]

Suppose, The 1st and 2nd columns have been exchanged along with the given determinants.

So that,

=

Turns out the two determinants are the same.

So,

or,

Means,

1. Inverse Matrix, = ?

Hints: = Square Matrix, = Determinants, = Adjoint Matrix, = Transpose Matrix, = Unit Matrix

1. = [ 0 ] (ans.)
2. =
3. =
4. = [ 0 ]

Prove:

In the case of any unexceptional matrix , it can be proved that,

= . , where is Unit Matrix

Or, = . [ From the definition of inverse matrix]

Therefore*,*  = [ 0 ]

---------------------------Chapter - 2 (Vector)------------------------

1. Which is the exchange rule for vector addition?

Hints: P, Q, R are the vector sign and and are two scaler sign.

1. P + Q = Q + P (ans.)
2. (P + Q) + R = P + (Q + R)
3. (P+Q) = P + Q
4. P = P

Prove:

(P + Q) + R = P + (Q + R) is the rule of co-provision

(P+Q) = P + Q is the distribution rules for scaler multiplication

P = P is the exchange rules for scaler multipliers

So, P + Q = Q + P is the exchange rule for vector addition

1. What is the rule of co-provision of vectors ?

Hints: P, Q, R are the vector sign and and are two scaler sign.

1. (P + Q) + R = P + (Q + R) (ans.)
2. P + Q = Q + P
3. P = P
4. () P = P + P

Prove:

P + Q = Q + P is the exchange rule for vector addition

P = P is the exchange rules for scaler multipliers

() P = P + P is the distribution rules for scaler multiplication

So, (P + Q) + R = P + (Q + R) is the rule of co-provision of vectors.

1. What rule is for P = P vector?

Hints: P, Q, R are the vector sign and and are two scaler sign.

1. Exchange Rules for Scaler Multiples (ans.)
2. Co-provision rules of scaler multiplier
3. Distribution rules for scaler multiplication
4. Co-provision rules

Prove:

P = P is the exchange rules for scaler multipliers

1. What rule is for (P) = P vector?

Hints: P, Q, R are the vector sign and and are two scaler sign.

1. Co-provision rules for Scaler Multiples (ans.)
2. Exchange Rules for Scaler Multiples
3. Co-provision rules
4. Distribution rules for scaler multiplication

Prove:

(P) = P is the co-provision rule of the scaler multiples

1. Which is the distribution rule for the scaler multiplication of vectors?

Hints: P, Q, R are the vector sign and and are two scaler sign.

1. () P = P + P (ans.)
2. P = P
3. (P + Q) + R = P + (Q + R)
4. (P+Q) = P Q

Prove:

P = P is the exchange rules for scaler multipliers

(P + Q) + R = P + (Q + R) is the rule of co-provision of vectors.

(P+Q) = P Q No rules

So, () P = P + P is the distribution rule for the scaler multiplication of vectors.

1. Which is the distribution rule for scaler multiplication?

Hints: P, Q, R are the vector sign and and are two scaler sign.

1. (P+Q) = P + Q (ans.)
2. (P+Q) = P Q
3. () P = P P
4. P = P

Prove:

(P+Q) = P Q No rules

() P = P P No rules

P = P is the exchange rules for scaler multipliers

So,

(P+Q) = P + Q is the distribution rule for scaler multiplication

1. If point is the middle point of then ’s position vector, = ? (Page: 29 | FIG : 2.9)

Hints: Middle point, , = position vector, = position vector, = line

1. = (ans.)
2. =
3. =
4. =

Prove:

If point is the middle point of then ’s position vector,

= = =

1. When point P divides AB into ration, then = ? (Page: 29 | FIG : 2.9)

Hints: Middle point, , = position vector, = position vector, = line

1. = (ans.)
2. =
3. =
4. =

Prove:

1. If point divides inward into then ’s position vector, = ? (Page: 31 | FIG: (d) tri-angle )

Hints: = Position vector, = Middle

1. = (ans.)
2. =
3. =
4. =

Prove:

Suppose, the position vector of the triangle's vertex is the middle point of respectively, three points and respectively. So that, position vector

position vector

and position vector

If point divides inward into then ’s position vector, =

=

1. Part, = ? (Page: 32 | FIG : 2.10)

Hints:

1. = (ans.)
2. =
3. =
4. =

Prove:

Suppose, and lines meet points at right angle and indicate axis respectively.

Suppose, a single vector towards the axis and any point respectively is the Cartesian coordinates of

Then, From the figure we get,

Again, we know,

= =

or, =

Similarly = and =

Now, if length of = then,

এ, = + …

and, এ, = + …

Therefore, = + = + +

= + +

= + +

So, =

1. Vector equation of straight line, = ? (Page: 34 | Figure 2.14)

Hints: λ = scaler, = vector, = vector

1. = (ans.)
2. =
3. =
4. =

Prove:

Suppose, is middlepoint and position vector of point , = and on the line is any point whose position vector = .

From triangle we get,

or,

But vector parallels vector। So, , when is a scaler.

From (i), =

or

or, = , which is the vector equation of the determining straight line.

1. The equation of the straight line parallel to the main point and vector, = ? (Page: 34 | Figure 2.14)

Hints: λ = scaler, = vector, = vector

1. = (ans.)
2. =
3. =
4. =

Prove:

Suppose, is main point and position vector = and on the line is any point whose position vector is = .

From, triangle we get,

or,

But, the vector is parallel to the vector. So, , when is a scaler.

From equation (i), =

or

or, = , which is the vector equation of the straight line.

Now, If the straight line is mainstream, then , so, the equation of the straight line parallel to the main point and vector

=

,

1. Vector equation of two dotted straight lines, = ?

Hints: λ = scaler, = vector, = vector

1. = (ans.)
2. =
3. =
4. =

Prove:

Suppose, is middle point, the line passes through and point and is any point on the line.

Suppose, position vector of and points is respectively = , = and = .

From the figure we get, + =

or, = – =

Now, the container line of the and vectors is the same. So,

= λ

= λ (b – a)

again, + = or, = – or,

Therefore, = , which is the vector equation of two dotted straight lines.

1. How many times the cross product value of the two vectors is of the respective parallel area? (Page: 43 | FIG : 2.18.1)

Hints:

1. Equal (ans.)
2. Double
3. Triple
4. Four times

Prove:

From parallel, two vectors and are indicated by two adjacent arms of the and respectively.

If , then

Where a single vector perpendicular to the plane surface of the vectors and . Mention: If the right-arm scroll from to is rotated at the smallest angle, the direction of the is along the and the direction of the will be along the if it rotates from to .

Again, = =

= , when

= .

= 2 ×

= The area of parallel

So, the cross product value of the two vectors is equal to the area of the respective parallel.

1. What are the conditions for paralleling the two vectors?

Hints:

1. Vector multiplication 0 (ans.)
2. Vector multiplication 1
3. Vector multiplication -1
4. None

Prove:

= 0 or, If π, sin = 0

Therefore, = 0 means, when the vector is parallel, their vector multiplication is zero.