Two vectors are said to be equal if their --------- are equal.

magnitudes and directions

Two vectors A, B, are said to collinear (linearly dependent) if there are scalar a and b such aA + bB = 0 implies -----

a and b are not all zero

Collinear vectors are said be --------

linearly dependent

Find the unit vector in the direction of the vector 3i + 2j + 6k.

(3i + 2j + 6k)/7

The following are true about scalar product of vectors accept -----

j. j = 1

Given that v = 2i + j + 5k and u = 3i -4j + k, find v.u

7

Find the direction cosines of the vector 3i + 4j

3/5, 4/5

Find sum of direction cosines of the vector 3i + 2j + 6k.

1/7

Given that vector D= 2i - 3j + 5k and P = 4i + j + 6k find D.P

35

If vector OC = 2i + j and vector OB= 6i -2j, find the magnitude of vector CB

5

Find the vector product of A = i + j+K and B = 3i +3j+3K

0

Find the acute angle (to the nearest degree) angle between the vectors a=-3i+4j and

b=5i+12j.

59.49°

Find a vector that is of magnitude 6 units and is collinear to the vector i+j.

32i+32j

Given that A =2i + j-3k, B = i- 2j+k C= i +j -4k. Evaluate A. (B□C).

10

Find the unit vector perpendicular to the plane of the vectors A=3i-2j+4k and

B= i+j-2k

15(2i+j)

An object moves in a straight curve R $= (t^3 2t)$ i $-3e_2t$ j $+2\sin 5tk$, Find its velocity at time t=1.

5i +0.812 j+ 2.837k

If the scalar product of vectors 2i - j -4k and 5i - 2j –mk is four, find m.

-2

Find the angle between the vectors 2i-4 j +k and 2i -3j -3k.

cos-1(0.6048)

Determine s such that the vectors s i +4 j +4k and –2 i + 5j +sk perpendicular.

-10

Find the value of a that makes the vectors 5 i -a j +2k and i + 3j +5k perpendicular.

5

Determine n such that the vectors 5i +n j -5k and -4 i + nj +k are perpendicular.

5

Determine the unit vector parallel to the sum of vectors 3i +4 j -5k and i + 8j +9

12i+4j+3k13

Find the scalar product of the vector -2i-j-2k and the unit vector parallel to the vector 4i+3j-12k

1

Find the vector product of v = (1, 0,2) and u = (2, 4, 3).

(-8,1, 4)

Find the gradient of the scalar field ∅ x, y, z=x3yz2 at the point (1,1,1)

3i + j +2k

If that ∅=x4y+z2, find the Laplacian of ∅

2(6x2 +1)

Given that R=xzi-y2j+2x2yk , find ∇.(∇xR)

0

Given that R=xzi-y2j+2x2yk , find the divergence of R

z-2y

Given that ∅=3y2x+x2z2, find ∇∅

(3y2+2xz2)i+6yxj+2zx2k

If $\phi = 3y^2x + x^2z^2$, find $\nabla^2\phi$.

$2z^2 + 6x + 2x^2$

Given that $=yxi + yx^2j + 2zyk$, find $(\nabla \times A)$

$2zi + x(2y-1)k$

Given that $T = y^2x^2i + x^2z^2 j + y^2z^2k$. find curl of T.

$2z(yz - x^2)i + 2x(z^2 - yx)k$

Given that $T = y^2x^2i + x^2z^2 j + y^2z^2k$. find curl of T at point $(1, -1, 1)$

$-4i + 4k$

The scalar product of vectors a and b, where θ is the angle between them, is ....

$|a||b| \cos\theta$

If that $\phi = x^2z - yz^2$, find the Laplacian of ϕ

$2z - 2y$

If that $\phi = x^2y^2z^2$, find the Laplacian of ϕ.

$2(y^2z^2 + x^2z^2 + x^2y^2)$

Given that $A = yxi + yx^2j + 2zyk$, find $\nabla \times (\nabla \times A)$

$2xi - (2y - 3)j$

Let $= yxi + xzj + zyk$, find $\nabla \times (\nabla \times E)$.

$-2j$

Find the Jacobian of the transformation $x = R\sin\theta\cos\phi$, $y = R\sin\theta \sin\phi$ and $z = R\cos\phi$ with respect to R, θ and ϕ

$-R^2\sin\theta$

Determine the Jacobian of $x = u+v$, $y = 2v$ with respect to u and v

2

Given that $u = x+2y$ and $v = x - y$, find the Jacobian of the transformation x and y with respect to u, and v

$-1/3$

Find the Jacobian of $x = u+v +s$, $y = 2v-s$ and $z = u-v$ with respect to u, v and s

-5

Given that $x = 2s – w$, $y = v+s+2w$ and $z = 2v-s -w$ find the Jacobian of the transformation x and y with respect to v, s and w5

13

Let ∂x, $y\partial u$, v be the Jacobian of the transformation x and y with respect to u and v, then ∂x, $y\partial u$, v is equal to --------

$-\partial y$, $x\partial u$, v

Expand 1-i1+i4

1

Let F(z)= 7-z1-z2 and z =1+2i. Find F(z).

1+i/2

Given that R =y2zx2i+xj-y4zx3k , find ∇.R .

2xy2zi+y4x3k

Given that u =x+4y and v=x-3y, find the Jacobian of the transformation x and y with respectt to u , and v

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Given that u =x+2y and v=x - y, find the Jacobian of the transformation x and y with respect to u and v

-1/7

Given that =zxi+zyj+yxk , find ∇x(∇xA)

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(3y2+2xz2)i+6yxj+2zx2k

If ø=3y2x+x2z2 , find ∇2ø.

2z2+6x+2x2

Given that =yxi+yx2j+2zyk , find (∇xA)

2zi+x(2y-1)k

Given that T=y2x2i+x2z2 j+y2z2k. find curl of T.

2z (yz-x2)i+2x(z2-yx)k

Given that T=y2x2i+x2z2 j+y2z2k. find curl of T at point (1, -1,1)

-4i+4k

The scalar product of vectors a and b, where θ is the angle between them, is ....

|a||b| cos θ

If that ø=x2z-yz2, find the Laplacian of ø

2z-2y

If that ø=x2y2z2, find the Laplacian of ø.

2(y2z2+x2z2+x2y2)

Given that A =yxi+yx2j+2zyk , find ∇x(∇xA)

2xi-(2y-3)j

Let E=yxi+xzj+zyk , find ∇x(∇xE) .

-2j

Find the Jacobian of the transformation x=Rsinθcosø, y=Rsinθ sinø and z=Rcosø with respect to R , θ and ø

-R2sinθ

Determine the Jacobian of x=u+v, y=2v with respect to u and v

2

Given that u =x+2y and v=x - y, find the Jacobian of the transformation x and y
with respect to u, and v

-1/3

Find the Jacobian of x=u+v +s, y=2v-s and z=u-v with respect to u, v and s

-5

Given that x=2s – w, y=v+s+2w and z = 2v-s -w find the Jacobian of the
transformation x and y with respect to v , s and w5

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Let ∂x, y∂u, v be the Jacobian of the transformation x and y with respect to u
and v, then ∂x, y∂u, v is equal to --------

-∂y,   x∂u,   v

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Given that u =x+4y and v=x-3y, find the Jacobian of the transformation x and y
with respect to u , and v

-2

Given that u =x+2y and v=x - y, find the Jacobian of the transformation x and y
with respect to u and v

-1/7

Given thatA =zxi+zyj+yxk , find ∇x(∇xA)

2k

A vector V with a unit vector a and magnitude k is written as V = -----

Ka
The unit vector in the direction of the resultant of vectors 2i -j + k and

i + j + 2k is......

i + k
If the scalar product of vectors i - j -k and 3i -2j –ak is eight, find a.

3
If A.B =0 then the angle between vectors is --------

90
If AxB =0 and A and B are not null vectors, then A and B are -------

Parallel
Find the acute angle between the vectors a=-4i-3j and b=5i-12 to nearest degree.

58
The vector product of a=2i+j+k and b=i+3j-2k is -----

(17)-i+5j+5k
Determine the acute angle between the vectors 2i+4j and 5i-4j to the nearest degree.

78°
Let ∅ (x, y, z) = constant c be an equation of a surface then, ∇∅ is ------to this surface.

Normal
If ∅ x, y, z=x4y6z4+xy . determine ∇x(∇∅)

Zero
Let ∅ x, y, z=x3y2z4 . determine curl of ∇∅

0
Find the gradient of the scalar field ∅ x, y, z=x3y2z4 at the point (1,1,1)

3i+2j+4k
Let ∂x, y∂u, v be the Jacobian of the transformation x and y with respect to u and v. Then ∂x, y∂u, u is equal to --------

0
Let ∂x, y∂u, v be the Jacobian of the transformation x and y with respect to u and v. Then ∂x, k∂u, v (where k is constant) is equal to --------

0
Determine the vector product of the vectors u=3i-j+k and v=4i+2j-k.

-i+7j+10k
Determine the scalar product of the vectors A =4i +2 j- 6k and B = i+ 6j+k

10
Given that A =2i + j-3k, B = i- j+2k, C= i +3j -k. Evaluate A. (BxC)

-19
Find the vector perpendicular to the plane of the vectors A= i-j+k and B= i+j-2k

-i+3j+2k
Given that A =2i + j-3k, B = i- j+2k C= i +3j -k. Evaluate C. (AxB)

-19
An object moves in a straight curve G=(t3+2t2+2t)i+3e(t-1)j+2tk. Find its acceleration at time t=1.

10i +3j
Find the unit vector in the direction of the sum of the vectors i +6j and 2i - 2j .

3i/5+4i/5
An object moves in a straight curve R=(3t2+t)i+3e(t-2)j+2k Find its velocity at

time t=2.

13i +3j
Find the gradient of the scalar field ø x, y, z=4xzy2 at the point (1, 1, 2)

8i +16j +4k
Given that E=xzi-y2j+2x2yk , find ∇.E

4xy
Given that R=x+zi-y2j+2x2yk , find ∇.∇xR

0
Given that T=y2i+z2 j+x2k. find curl of T.

2zi+2xj-2ky
Given that P=y2i+z2 j+x2k.. find curl of P at point (2, 2, 2)

4i+4j+4k
Let the scalar product of vectors xi +3 j -5k and xi + j -2k be thirty eight. Find x.

5
The scalar product of vectors 2i + cj +6k and 3i + 5j -6k.is five, find c.

7
If that ø=x2y2z2, find the Laplacian of ø at (1, -1, -1).

6
Given that A =yxi+yx2j+2zyk , find curl curl A at (3, -1, 5)

6i+5j
Let E=yxi+xzj+zyk , find magnitude of curl E

2
Find the Jacobian of the transformation x=(r+2)sinθ , y=(r+2)cosθ with respect to r and θ

* -(r+2)*
Determine the Jacobian of   x=vcosθ , y=vsinθ with respect to v and θ

V
Determine the Jacobian of   x=3u+2v, y=v with respect to u and v

3
Find the Jacobian of   x=u-v +s, y=2u+v-s and z=v+s with respect to u, v and s

6
If A¯ is the conjugate of the complex number A, determine A¯ +A

ˉ□2Re(z)*
Evaluate 1-i1+in where n is a positive even positive integer.

1
Evaluate 1-i1+in where n is a positive odd positive integer.

-i
Given that F(z)= 2-z1-z and z =1+i, find F(z)

-1+2i
Given that F(z)= 4+z1-z and z =1-i, find F(z)

-1+5i
Expand (1+2i)(1+i)(1-i).

2+4i
Find the real part of the complex number 4+i4-i2

15/17
If z=2(cosπ6+isinπ6), find z6

-64
Evaluate 1+i1-i8

1
Evaluate 1-i1+in where n is a positive odd positive integer.

-i
Given that u =3x+y and v=x -2y, find the Jacobian of the transformation x and y with respect to u, and v

1
Evaluate 1-i1+in where n is a positive even positive integer.

1
Given that u =x+y and v=2x-y, find the Jacobian of the transformation x and y with respectt to u , and v

-1/3
Evaluate 1-i1+in where n is a positive even positive integer.

1