MTH282

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 t32t) i -3e2t j +2sin 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 ∅=3y2x+x2z2 , find ∇2∅.

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 ∅=x2z-yz2, find the Laplacian of ∅

2z-2y

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

2(y2z2+x2z2+x2y2)

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

2xi-(2y-3)j

Let =yxi+xzj+zyk , find ∇x(∇xE) .

-2j

Find the Jacobian of the transformation x=Rsin⁡θ⁡cos⁡∅, y=Rsin⁡θ sin⁡∅ and z=R⁡cos⁡∅ with respect to R , θ and ∅

-R2sin⁡θ

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∂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

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 =zxi+zyj+yxk , find ∇x(∇xA)

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

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

-1/3

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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1+i/2

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2xy2zi+y4x3k

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 ∅ 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 ∅=x2y2z2, find the Laplacian of ∅ 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)sin⁡θ , y=(r+2)cos⁡θ with respect to r and θ

\* -(r+2)\*

Determine the Jacobian of x=vcos⁡θ , y=vsin⁡θ 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

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(cos⁡π6+isin⁡π6), 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\*