1. Find the area of the region that shared between two curves and .
2. Determine the horizontal tangent of the curve .
3. For the points A(3,-4,-2) ,B(5,1,-3), C(-2,1,3) :
4. Locate each point in its octant
5. Find area of ABC .
6. Find the distance from the (2,1,6) to the plane ABC .
7. Find the center and radius of the sphere
8. Find the center and radius of the sphere
9. by Applying the Definition of Work find the work done by **F** in acting from *P*

to *Q .*If F=50 N (newtons), and D=6 m

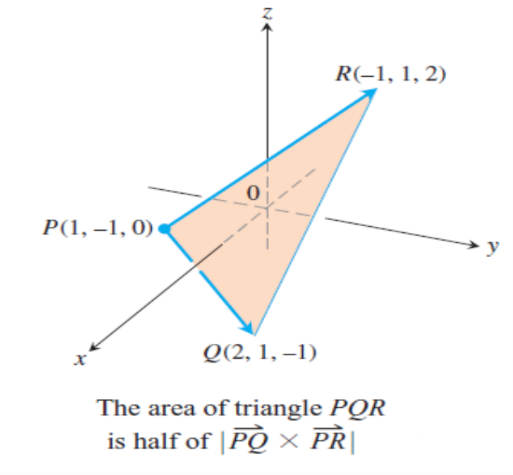
1. Find the angle between **u=2i8j+4k** and **v=6i+9j3k .**
2. Find the angle in the triangle ***ABC***determined by the vertices A(0,0) ,B(3,5),C(5,2) as shown in figure. 
3. Prove that the two vectors **u=3i2j+k** and **v=2j+4k are** perpendicular**.**
4. Determine the value of **b** so that **a=3i+bj+5 k** and **c=2i-2j-3k** areorthogonal.
5. Find the vector projection of **u=8i+5j+2k** onto **v=i-2j-3k** and the scalar component of **u** in the direction of **v.**
6. write **u** as the sum of a vector parallel to **v** and a vector orthogonal to **v.**

**=4i+2j-6k=3i-2j**

1. Find the angle between A=2i+4j+k and B=.
2. Write the vector B=3j+4k as the sum of a vector parallel to A, A=i+j and a vector A .
3. Find the angle between the diagonal of a cube and the diagonal of one of its faces [hint: use a cube whose edges represent i,j,k].
4. Find the distance between the lines 2x+y=2 and 2x+y=4 .
5. Find the distance from the point p(4,3)to the line x+3y=6.
6. Sketch the line.
7. Write the normal to the line N=i+3j .
8. From the point R(0,2),P(4,3)
9. Find **A** if

**A=i+jk** , **B= 2i+3j4k**

1. **For the vertices *P*(1, -1, 0), *Q*(2, 1, -1), *R*( -1, 1, 2).**

 **Find:** 1) a Vector Perpendicular to the Plane.

2) the area of the triangle with vertices.

3) a unit vector perpendicular to the plane.

1. Find the length and direction of Aand B.

A=,B=5i+4j

1. Find a vector normal to the plane formed by the three points  **A(1,-3,2), B(4,0,-1), C(7,2,-1)**

* Find the distance from the origin to the plane **ABC,** by projecting onto **N .**
* Find area of **ABC .**

1. Find the parametric equation for the line

through the point(-2,0,4) parallel to the vector =2i+4j-2k .

1. Find the parametric equation for the line segment joining the two points P(-3,2.-3) and Q(1,-1,4) .
2. Find the distance from the point (1,1,5) to the line L :x=1+t, y=3-t, z=2t
3. Find an equation for the plane through (-3,0,7) perpendicular to N=5i+2j-k.
4. A:Find an equation for the plane through *A*(0, 0, 1),

*B*(2, 0, 0), and *C*(0, 3, 0).

B:Find the distance from the point(1,1,3) to the plane 3x+2y+6z=6 .

1. Find the point in which the line : x= +2t ,y=, z=1+t ,

meets the plane 3x+2y+6z=6 .

1. a)Find the angle between the planes

3x-6y-2z=15 and 2x+y-2z=5.

b) Find the vector parallel to the line of intersection .

c) Find parametric equation for line which the two planes intersect.

OOFind parametric equations for the lines in the following problems:.

1. The line through the origin parallel to the vector 3j+k.
2. The line through (1, 1, 1) parallel to the *z*-axis.
3. The line through the point (3,-2,1) parallel to the line x=1+2t , y=2-t, z=3t.
4. The line through(2,4,5) perpendicular to the plane 3x+7y-5z=21.
5. The line through (2,3,0) perpendicular to the vector A=i+2j+3k and B=3i+4j+5k.
6. Find the distance from the point P(0,0,0) to the line :x=5+3t,y=5+4t,z=35t.

OOFind equations for the plane :

1. the plane through (1,-1,3) parallel to the plane 3x+y+z=7.
2. the plane through (2,4,5) perpendicular to the line:x=5+t,y=1+3t,z=4t.
3. the plane through A(1,-2,1) the vector from origin to A.
4. Find the particle’s velocity and acceleration vectors .Then find the particle’s speed at the given time, R(t)=3cos t i+3sin t j , t= .
5. R(t) is the position vector. Find the time in the given interval, when the velocity and acceleration vectors are orthogonal:
6. R(t)=(t
7. R(t)=ik
8. R(t) is the position vector. Find the angle between the particles velocity and acceleration vectors when t=0.

A)R(t)= i+ sin t j+ cos t k

B)R(t)= +1)i+ t j+ k

1. Find the R(t) from given *acceleration vector and initial condition. A(t)=3ti+4j+k v(0)=4i ,R(0)=5j.*
2. Find the length of one turn of the helix R(t)= +t k
3. prove that =6i and =i.
4. prove that =3i and =i.
5. Find unit vectors tangent and normal to the curve y= at (1,1) .
6. prove that the line segment joining the midpoints of two sides of triangle is parallel to and half as long as the third side .

OO In the following problems, express each of the vectors in the form :

1. where (1,3) and
2. ,o(0,0) , is the midpoint of the (2,-1) and
3. + ,A(1,-4) ,B(3,0), C(-2,5), D(6,-6)
4. A unit vector making an angle of with the positive y-axis .
5. A unit vector making an angle of with the negative x-axis .
6. Unit vector obtained by rotating J= in the clockwise direction .

OO Find the length, the direction and the angle of a vector with the positive x-axis.

=i+j

=i+j

=2ij

OO A person on a hang glider is spiraling upward due to rapidly rising air on a path having position vector R(t)=(3 cos t)i+(3 sin t)j +k The path is similar to that of a helix(although it’s *not* a helix) for 0.

Find:

**56.** the velocity and acceleration vectors,

**57.** the glider’s speed at any time *t*,

**58.** the times, if any, when the glider’s acceleration is orthogonal to its velocity

**59.** Find as a function of s, if F(t)=i+ sin(t+1)j+k and t=.

**60.** show that v(t)=sin ti+ cos tj+k has a constant length and is orthogonal to its derivative.

**61.** The acceleration of a particle is a==cos ti+sin tj .Find the particles position on a function of t if v(0)=j and R(0)=i.

**62.** Find the value of , if f(x,)=4++6x7y2 .

63. Find the partial derivatives of f with respect to each variable:f(x,)=1+x

OO Find the value of , if:

64. F(x,y)=

65. F(x,y)=(

66. F(x,y)=

(3x)

**OO** Find the partial derivative of the function with respect to each variable.

68. F(x,y,z)=1++2x .

69. F(t,

70. G(u,v)=

71. H(

72. G(r,

73. W(p,k,

74. A(c,h,n,m,q)= + cm+

**75.** assume that the equation xy+x defines z as a differentiable function of the two independent variables x and y. find the value of at the point (x,y,z)=(1,3,1).

**76.** assume that the equation xZ+x defines x as a differentiable function of the two independent variables y and z. find the value of at the point (x,y,z)=(1,3,1).

OO Find the partial derivative of the function with respect to each variable.

77. F(x,y,z)=1++2x .

78. F(t,

79. G(u,v)=

80. H(