MTH103

The equation of the circle centre (2, -3) and radius 4 is given as _____

y2 + x2 – 4x + 6y - 3 = 0

_____ is the equation of a line (-1, -4) whose gradient is 1?

y = x – 3

The equation of a straight line is of the form _____

y = mx + c

{100:SHORTANSWER:%100%1}1

{100:SHORTANSWER:%100%45 degree}45 degree

The distance between the pairs of points A(0, 1) and B(6, 9) is _____

10

Let the symbols i, j and k represent unit vectors in the direction OX, OZ and OZ respectively. If OP-=ai+bj+ck, then OP-= _____

a2 + b2 + c2

A point P(x, y) means that P is in the _____

(x, y)-plane

zn = [r(cosθ + isinθ)]n is called the _____

De Moivre's Theorem

{100:SHORTANSWER:%100%First}First

{100:SHORTANSWER:%100%last}last

A _____ is also defined as a directed line segments

Vector

A _____ vector is a vector whose position in space is fixed in addition to its magnitude and direction

Point located

The direction cosines (l, m, n) are the cosines of the angles between the vectors and the axes _____ respectively

OX, OY, OZ

Two vectors a→ and b→ are said to be equal if they have the same _____

magnitude and direction

The subtraction of vectors can be considered as the addition of its _____

Negatives

Given that r1 = 3i + 5 j , r2 = −4i +19 j the modulus of 5r1 − r2.is _____

19

{100:SHORTANSWER:%100%-5}-5

{100:SHORTANSWER:%100%4}4

The angle between two lines in a plane is defined to be 0 if the lines are _____

Parallel

Force, velocity, acceleration are examples of _____

Vectors
If a= a1i+a2j+a3k and b= b1i+b2j+b3k, then ab = _____

a1b1 + a2b2 + a3b3
Mechanical force acting on a body is an example of _____ vector

Line
_____ is a vector which is not restricted in any way

Free Vector
_____ is the value of AB- + BC- + C D- + DE- + EF-

AF-
If PQRS is a square with T and U the mid points of SP and QR respectively, then _____= 2TU-

PQ-+RS-
The collection of objects called vectors which may be added together and multiplied by numbers is called _____

Vector Space
If Z1 = 3i + 5j and Z2 = 7i + 3j. _____ is Z1 + Z2

10i + 8j
If Z1 = 2i − 4j, Z2 = 2i + 6j, Z3 = 3i − j. _____ is Z1 + Z2 + Z3

7i + j
_____ is |P Q- | ifP Q- = 5i + 2j + 4k

5*3*
The focus in the equation y2 = 5x is _____

54,0
tan β is zero, then m1 = m2. This implies _____ lines

Parallel
When m1m2 = −1. This implies that the lines are _____

Perpendicular
If −3x+4y =8 and −2x − 8y − 14 = 0 are two intersecting lines, the angle formed is _____

-14.63o
_____ is the line equation through the point (−1, 2) which is parallel to y = 2x + 1

3x + 5
_____ is the parametric equation representing a circle with centre (2, −1) and radius 3

y = −1 + 3 sin θ
A _____ is defined as the locus of a point which moves so that it is always the same distance from the fixed point (called the focus) and a given line (called the directrix)

Parabola
{100:SHORTANSWER:%100%Horizontal}Horizontal
{100:SHORTANSWER:%100%vertical}vertical
In an axiomatic development of a branch of mathematics, one begins with _____

Horizontal, vertical
_____ in analytic geometry of vector are the cosines of angles between the vector and the three coordinate axes

Direction Cosines
The l,m,n of the vector r = 2i + 4j – 3k yields _____

229,429,-329
If a= a1i+a2j+a3k and b= b1i+b2j+b3k, then a x b = _____

a2b3- a3b2i- a1b3- a3b1j+ a1b2- a2b1k
The distance between x1,y1 and x2,y2 is given by _____

x2- x12+ y2- y12
Given a=10, b=13, θ= 59.5o, the scalar product of a and b is _____

65.98
When two vectors are at right angles to each other the dot product is _____

0
The cross product of a = (2, 3, 4) and b = (5, 6, 7) is _____

(–3, 6, –3)
The general equation of a circle is given by _____

x2+ y2+ 2gx+2fy+c=0
If i x j = k and j x k = i, then k x i = _____

J
The Locus of points at a distance of 3 from the point (0, 0) is given by the equation _____

x2 + y2 = 9
The coordinates of the midpoint of a line segment is _____ of the coordinates of the endpoints

Average
If A is (3, 6) and B is (4, 8). The coordinate of the midpoint of AB is _____

(312 , 7)
_____ of a line is defined as the ratio of the vertical distance the line rises or falls to the horizontal distance

Gradient
_____ is the center and radius of the circle x2 + y2 + 8x + 6y = 0

Center = (–4 ,–3), r = 5
A quantity that is defined by magnitude (size) but no direction is called _____

Scalar quantity

… is one that has both magnitude and direction in which it operates.

Vector quantity

Length, area, volume, mass, time etc, are examples of…

Scalar quantity

Force, velocity, acceleration, etc, are examples of …

Vector quantity

In geometrical representation of vectors in 1-3 dimensions, the length of the line denotes…

the magnitude of the quantity, according to a stated vector scale

An ellipse can be defined as the locus of all points that satisfies the equation

x2a2+ y2b2=1

Two vectors a and b are said to have the same magnitude and the same direction if and only if they…

equal

Which of the following is not a type of vector

Block Vector

For … AB to occur, point A has to be fixed.

Position Vector

… is one that can shift or slide along its line of action

Line Vector

Mechanical force acting on a body is an example of …

Line Vector

… is one which is not restricted in any way

Free Vector

… is defined by its magnitude and direction and can be drawn as any one of a set of equal length parallel lines

Free Vector

If a is a force of 30N, acting in the east direction. b is a force of 40N, acting in the north direction. Then the magnitude of the vector sum r of these forces will be

50N

Find AB- + BC- + C D- + DE- + EF-

AF-

ABCD is a square (quadrilateral) with T and U the mid points of SP and QR respectively. Which expressions is true?

PQ-+RS-=2TU-

In triangle ABC, the points L, M, N are the midpoints of the sides AB, BC and CA respectively. Which these expressions is true?

2AB-+3BC-+AC-=2LC-

… is a vector as a way of determining the magnitude and direction in its coordinate of x and y axis.

Component of a vector in terms of unit vector

… is a collection of objects called vectors which may be added together and multiplied by numbers.

Vector in space

If Z1 = 3i + 5j and Z2 = 7i + 3j. Find Z1 + Z2

10i + 8j

The gradient of the line AB in figure 8 is...

y-y1y2-y1=x-x1x2-x1

The equation of the circle centre (2, -3) and radius 4 is given as…

y2 + x2 − 4x + 6y - 3 = 0

What is the gradient of the straight line and the angle of inclination of the points, A(2, -3) and B(4, 5)?

gradient=1, θ = 45o

Let A, B, C be the points (2, 3), (3, -2) and (-1, 4). The length of AB yields…

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In the x-y plane the equation of the hyperbola is given by...

x2a2- y2b2=1

If r is the hypothenus of a right-angled triangle with sides a and b and if i and j are unit vectors in the horizontal and vertical directions, then r is given by

ai+ bj

… is also defined as a directed line segment.

vector

Polar form of a complex number is ……

r(cosθ+ isinθ)

a2 + b2 is equal to ……

(a+ib)(a-ib)

Given that x + 2y = 3, 3x + 4y =1. What is x and y?

-5, 4

The coordinates of the midpoint of a line segment is

the average of the coordinates of the endpoints

If A is (3, 6) and B is (4, 8). Find the coordinate of the midpoint of AB.

[312 , 7]

Consider the diagram below:

The angle of slope in the above diagram is...

tan θ

The equation of a straight line in a gradient - intercept form is...

y = mx + c

Using the diagram above, the equation of a straight line of gradient and one point form when a straight line passes through a given point p (x1, y1) is ...

y − y1 = m(x − x1)

Vector P Q- is defined by …

its magnitude (r) and its angle (θ)

If r is the Hypothenus of a right-angled triangle with sides a and b, with r = ai + bj, then

i and j are unit vectors in the horizontal and vertical directions

____ in analytic geometry of vector are the cosines of angles between the vector and the three coordinate axes .

Direction cosines

Find l,m,n of the vector r = 2i + 4j − 3k

The scalar product of a and b is defined as the scalar (number)…

abcos θ

If a=10, b=13, θ= 59.5o, the scalar product of a and b is…

65.98

When two vectors are at right angles to each other the dot product is ?

Zero

If a = a1i + a2j + a3k and b = b1i + b2j + b3k, a.b gives...

a1b1 + a2b2 + a3b3

Vector product of a and b is represented by ...

a x b

_____ is the locus of all points equidistant from a central point.

A parabola

The cross product of a = (2, 3, 4) and b = (5, 6, 7) is ____

(−3, 6, −3)

Let us consider a simplest case of a circle with centre at the origin and radius r as shown in figure 1. If the circle has a centre (0, 0) and radius r,

using Pythagoras theorem, the equation of the circle from the figure above is given as

x2 + y2 = r2

The Locus of points at a distance of 3 from the point (0, 0) is given by the equation ___

x2 + y2 = 9

Find the distance between the points A(4, 3) and B(6, 5).