LKE MNCUBE

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Unique Assignment Number: 771329

## Question 1

Let , and Let , where , and represents magnitude

Therefore, and , from standard position

Let standard position be

If they both lie on a circle then

But we know that , therefore

But we know that , therefore

The ends of both lines and lie on the same circle as

## Question 2

## Question 3

=

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=

=

= 3

Unit vector in direction of a : =

## Question 4

Let

So then = ||.| dot product definition

= .||.|

And also = ||.| dot product definition

= .||.|

Form an equation from

.||.| .||.|

.| .|

.|

From the above, vector or , is equivalent to vector v times the magnitude of vector v ( .|)

## Question 5

Let u = (1; 0; 2) ; v = (2; 1; 0) and w = (0; 2; 1).

**5 (i)**

3 = 3(2,1,0) – 2(1,0,2)

= (6,3,0) – (2,0,4)

= (6-2 , 3- 0, 0 - 4)

= (4,-2,-4)

**5 (ii)**

|| || =

absolute value norm

=

**5 (iii)**

(0×0– 2x1) - (1×0-2×2) + (1x1-0x2)

(0-2) - (0-4) + (1-0)

(-2, 4, 1)

(-2, 4, 1).

**5 (iv)**

**WRONG. LOOK AT ASSIGNMENT 3**

= ||.| dot product definition

= ||

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**5(v)**

**From 5(iii) above,**  (-2, 4, 1)

=

=

=

**5(vi)**

**From 5(iii) above,**  (-2, 4, 1)

**As an equation:** )

**Let be an arbitrary point on the plane**

)

is parallel to the plane and perpendicular to the cross product

).) = 0

= 0

= 9

6)

**Let the plane V =** ax + by + cz + d = 0

Let T be a point away from the plane

or

**Find magnitude of T**

distance equation

scalar equation of the plane

**Expression for unit vector of length 1 =**

**Project Q onto T**

where

**Let**

*Since T is a distance away from the plane, it is equivalent to d, which represents the constant part of the distance equation*.