

Course No: EQUIP 3322
Course Title: Electromagnetism
Date: 13/03/2018
No. of Questions: (3)
Time: 1hours
Using Calculator (No)

University of Palestine

First MidtermExam
1st2018-2017
Total Grade:15

Instructor Name: Eng. M. Timraz
Student No.: _____
Student Name: _____
College Name: _____
Dep. / Specialist: _____
Using Dictionary (No)

Question One:

(05/15)

A) Given two vectors:

$$\mathbf{A} = 2\mathbf{a}_x + A_y\mathbf{a}_y + A_z\mathbf{a}_z \quad \text{and} \quad \mathbf{B} = -3\mathbf{a}_x + 4\mathbf{a}_y - 7\mathbf{a}_z,$$

(a) find A_y and A_z if \mathbf{A} is parallel to \mathbf{B}

(2.5/05)

B) Express vector field $\mathbf{A} = 3\mathbf{a}_x + 4\mathbf{a}_y + 5\mathbf{a}_z$ in cylindrical and spherical systems.

(2.5/05)

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Question Two:

(05/15)

Given three vectors:

$$\mathbf{A} = -2\mathbf{a}_x + 3\mathbf{a}_y + 4\mathbf{a}_z, \quad \mathbf{B} = 7\mathbf{a}_x + \mathbf{a}_y + 3\mathbf{a}_z \quad \text{and} \quad \mathbf{C} = -1\mathbf{a}_x + 2\mathbf{a}_y + 5\mathbf{a}_z,$$

Find:

The volume of a parallelepiped defined by vectors \mathbf{A} , \mathbf{B} and \mathbf{C} .

Question Three: (05/15)

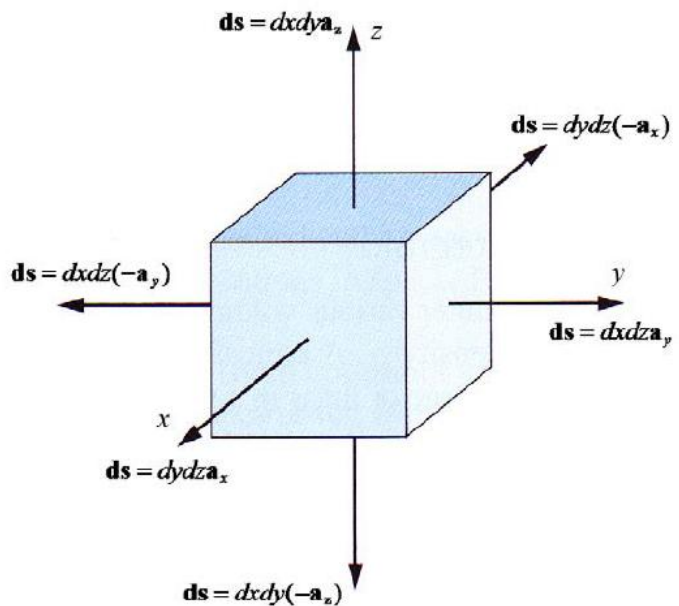
Assume that the vector field $\mathbf{A} = 5xy\mathbf{a}_x + xy^2\mathbf{a}_y + 4z\mathbf{a}_z$ is defined in a region $1 \leq x \leq 3$, $-2 \leq y \leq 4$ and $-1 \leq z \leq 2$.

The region has six surfaces (see the figure).

By using the closed-surface integral $\oiint \mathbf{A} \cdot d\mathbf{s}$ over the surface of this region.

Calculate the following surfaces:

- On the front surface, $x=3$ and A_x is the only component perpendicular to that surface.
- On the right surface, $y = 4$ and A_y is the only component perpendicular to that surface.
- On the top surface, $z = 2$ and A_z is the only component perpendicular to that surface.



*End of Questions
 Good Luck*