National University

of Computer & Emerging Sciences

Quiz # 1A
Instructor: Muhammad Kashif Ali

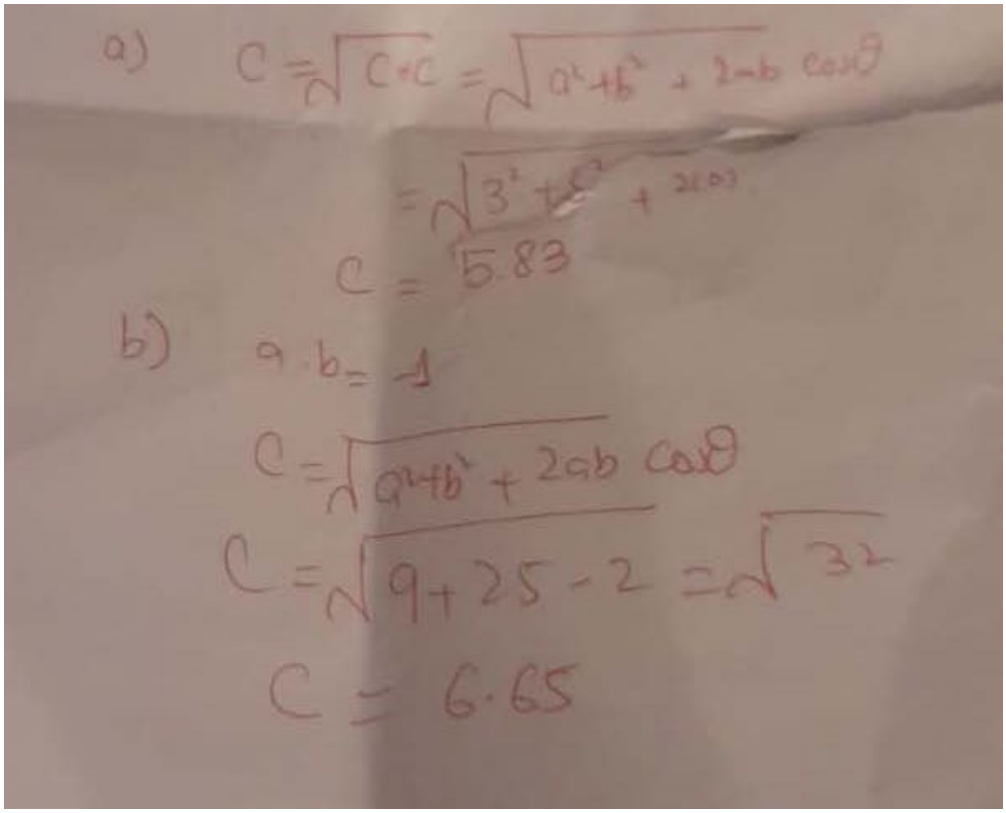
Name:_____ **Roll No:**_____
Section:_____ **Date:**_____

Q.NO.1 Magnitudes of two vector ($\vec{a}$ and $\vec{b}$) are given by a = 3 and b = 5. If $\vec{c} = \vec{a} + \vec{b}$, then what is the magnitude of $\vec{c}$. if

(a) $\vec{a}.\vec{b} = 0$

(b) $\vec{a}.\vec{b} = -1$

Solution:



Q.NO.1 For given vectors, calculate the curl.

$$\mathbf{v}_a = -y\hat{\mathbf{x}} + x\hat{\mathbf{y}}, \quad \mathbf{v}_b = x\hat{\mathbf{y}}.$$

Solution:

$$\nabla \times \mathbf{v}_a = \begin{vmatrix} \hat{\mathbf{x}} & \hat{\mathbf{y}} & \hat{\mathbf{z}} \\ \partial/\partial x & \partial/\partial y & \partial/\partial z \\ -y & x & 0 \end{vmatrix} = 2\hat{\mathbf{z}},$$

and

$$\nabla \times \mathbf{v}_b = \begin{vmatrix} \hat{\mathbf{x}} & \hat{\mathbf{y}} & \hat{\mathbf{z}} \\ \partial/\partial x & \partial/\partial y & \partial/\partial z \\ 0 & x & 0 \end{vmatrix} = \hat{\mathbf{z}}.$$