

"QUIZ" for Lecture 2

NAME: (print!) Fayez Raza Section: 28

E-MAIL ADDRESS SCANNED .pdf OF COMPLETED QUIZ to DrZcalc3@gmail.com  
(Attachment: q2FirstLast.pdf) ASAP BUT NO LATER THAN FRIDAY Sept. 11,  
8:00pm \_\_\_\_\_

1. Determine whether the two vectors are orthogonal and if not, whether the angle between them is acute or obtuse. a.  $\langle 1, 1, 1 \rangle$  ,  $\langle 3, -2, -1 \rangle$  .

b.  $\langle 4, 3 \rangle$  ,  $\langle 2, -4 \rangle$  .  $\alpha + \beta + \gamma$

a)  $\langle 1, 1, 1 \rangle \cdot \langle 3, -2, -1 \rangle = 0$  vector is orthogonal  
angle is neither acute/obsc

$$3 - 2 - 1$$

$$\frac{0}{\sqrt{3} \sqrt{14}} = 0$$

$$\cos^{-1}(0) = 90^\circ$$

b)  $8 - 12 = -4$   $\frac{-4}{5\sqrt{5}\sqrt{5}} = \frac{-4}{25} = -\frac{2}{5\sqrt{5}}$   $\cos^{-1}\left(\frac{-2}{5\sqrt{5}}\right)$   
 $100^\circ$

2. Calculate  $\mathbf{v} \times \mathbf{w}$ , if

$$\mathbf{v} = \langle 0, 1, -1 \rangle \quad , \quad \mathbf{w} = \langle 1, -1, 0 \rangle$$

$$\begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 0 & 1 & -1 \\ 1 & -1 & 0 \end{vmatrix}$$

$$\hat{i} \begin{vmatrix} 1 & -1 \\ -1 & 0 \end{vmatrix} - \hat{j} \begin{vmatrix} 0 & -1 \\ 0 & 0 \end{vmatrix}$$

$$+ \hat{k} \begin{vmatrix} 0 & 1 \\ 1 & -1 \end{vmatrix}$$

$$\hat{i} [0 - (-1)] - \hat{j} [0 - 0]$$

$$+ \hat{k} [0 - 1]$$

$$\hat{i} (-1) - 0 - \hat{k}$$

- vector is not  
orthogonal/  
angle is obtuse

$\langle -1, 0, -1 \rangle$