

Physics 101- Chapter 3

Quiz No. 2

Name: Key

ID:

Sec: 29

For the following three vectors, calculate the value:  $3\vec{C} \cdot (2\vec{A} \times \vec{B})$

$$\vec{A} = 2\mathbf{i} + 3\mathbf{j} - 4\mathbf{k}, \quad \vec{B} = -3\mathbf{i} + 4\mathbf{j} + 2\mathbf{k}, \quad \vec{C} = 7\mathbf{i} - 8\mathbf{j}$$

$$2\vec{A} \times \vec{B} = 2 \begin{vmatrix} \mathbf{i} & \mathbf{j} & \mathbf{k} \\ 2 & 3 & -4 \\ -3 & 4 & 2 \end{vmatrix} = 44\mathbf{i} + 16\mathbf{j} + 34\mathbf{k}$$

$$3\vec{C} \cdot (2\vec{A} \times \vec{B}) = 3 \cdot (7\mathbf{i} - 8\mathbf{j}) \cdot (44\mathbf{i} + 16\mathbf{j} + 34\mathbf{k})$$

$$= 3 [(7 \times 44) + (-8 \times 16) + (0 \times 34)] = 540$$