Quiz #2 Ch3-1

Name: Solution ID#: Sec#:

Given the three vectors$ \vec{A}=4\hat{i}+3\hat{j} , \vec{B}=3\hat{i}+4\hat{j} and \vec{C}=4\hat{i}+5\hat{j} $.

Find the following:

1. $\vec{A}⋅\vec{B}$
2. $\vec{A}×\vec{B}$
3. $\vec{A}+\vec{B}-\vec{C}$
4. The component of vector $\vec{B}$ along vector $\vec{A}$
5. The angle between$ \vec{A}$ and $\vec{B}$

= 12

= 12

= 0

= 0

1. $\vec{A}⋅\vec{B}=\left(4\hat{i}+3\hat{j}\right)⋅\left(3\hat{i}+4\hat{j} \right)=\left(4×3\right)\left(\hat{i}⋅\hat{i}\right)+\left(4×4\right)\left(\hat{i}⋅\hat{j}\right)+\left(3×3\right)\left(\hat{j}⋅\hat{i}\right)+\left(3×4\right)\left(\hat{j}⋅\hat{j}\right)=24$

$$\hat{i}=-9\hat{k}$$

$$\hat{i}=16\hat{k}$$

= 0

= 0

1. $\vec{A}×\vec{B}=\left(4\hat{i}+3\hat{j}\right)×\left(3\hat{i}+4\hat{j} \right)=\left(4×3\right)\left(\hat{i}×\hat{i}\right)+\left(4×4\right)\left(\hat{i}×\hat{j}\right)+\left(3×3\right)\left(\hat{j}×\hat{i}\right)+\left(3×4\right)\left(\hat{j}×\hat{j}\right)=7\hat{k}$
2. $\vec{A}+\vec{B}-\vec{C}=\left(4\hat{i}+3\hat{j}\right)+\left(3\hat{i}+4\hat{j} \right)-\left(4\hat{i}+5\hat{j} \right)=3\hat{i}+2\hat{j}$
3. $A\_{B}=\frac{\vec{A}⋅\vec{B}}{B}=\frac{24}{5}$
4. $cosθ=\frac{\vec{A}⋅\vec{B}}{AB}=\frac{24}{5×5}=\frac{24}{25} ⟹ θ=cos^{-1}\frac{24}{25}=16.3^{o}$