Name: _____ **Date:** _____ **Period:** _____

AP Physics C
Vector HO 25.2

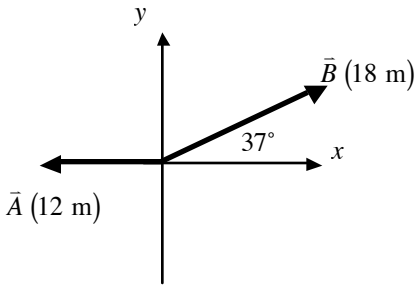

Figure 1

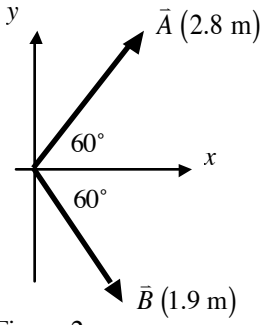

Figure 2

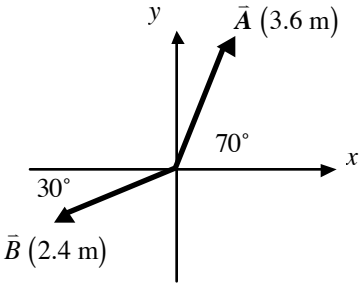

Figure 3

1.) Write each of the vectors in Figure 1 in terms of unit vectors $\hat{i}$ and $\hat{j}$ and find the unit vector in the direction of each vector.

2.) Write each of the vectors in Figure 2 in terms of unit vectors $\hat{i}$ and $\hat{j}$ and find the unit vector in the direction of each vector..

3.) Write each of the vectors in Figure 3 in terms of unit vectors $\hat{i}$ and $\hat{j}$ and find the unit vector in the direction of each vector..

4.) Find the scalar product $\vec{A} \cdot \vec{B}$ of the two vectors in Figure 1 using the definition of a scalar product and by using their components .

5.) Find the scalar product $\vec{A} \cdot \vec{B}$ of the two vectors in Figure 2 using the definition of a scalar product and by using their components .

6.) Find the scalar product $\vec{A} \cdot \vec{B}$ of the two vectors in Figure 3 using the definition of a scalar product and by using their components .

7.) Find the vector product $\vec{A} \times \vec{B}$ of the two vectors in Figure 1 using the definition of a vector product and by using their components .

8.) Find the vector product $\vec{A} \times \vec{B}$ of the two vectors in Figure 2 using the definition of a vector product and by using their components .

9.) Find the vector product $\vec{A} \times \vec{B}$ of the two vectors in Figure 3 using the definition of a vector product and by using their components .

10.) Find the angle between the following pairs of vectors:

a.) $\vec{A} = -1.0\hat{i} + 6.0\hat{j}$ and $\vec{B} = 3.0\hat{i} - 2.0\hat{j}$;

b.) $\vec{A} = 3.0\hat{i} + 5.0\hat{j}$ and $\vec{B} = 10\hat{i} + 6.0\hat{j}$

c.) $\vec{A} = -4.0\hat{i} + 2.0\hat{j}$ and $\vec{B} = 7.0\hat{i} - 14\hat{j}$