

PHY 117 – Chapter 1 - Exercises

Exercise 1-1

Consider two vectors: $\vec{A} = 3\hat{i} - 2\hat{j}$ and $\vec{B} = \hat{i} - 2\hat{j}$

- Use the component method to determine the magnitude and direction of vector $\vec{C} = \vec{A} + \vec{B}$.
- Use the graphical method to determine the magnitude and direction of $\vec{C}$.

Exercise 2-1

Consider the displacement vector $\vec{A} = (3\hat{i} + 3\hat{j})\text{m}$, $\vec{B} = (\hat{i} - 4\hat{j})\text{m}$, and $\vec{C} = (-2\hat{i} + 5\hat{j})\text{m}$. Use the component method to determine:

- the magnitude and direction of vector $\vec{D} = \vec{A} + \vec{B} + \vec{C}$.
- the magnitude and direction of vector $\vec{E} = -\vec{A} - \vec{B} + \vec{C}$

Exercise 3-1

Consider the displacement vectors $\vec{A} = (2\hat{i} + 4\hat{j})\text{m}$, and $\vec{B} = (\hat{i} - 7\hat{j})\text{m}$. If $\vec{A} - \vec{B} + 3\vec{C} = \vec{0}$, what are the components of $\vec{C}$? ($C_x = ?$, and $C_y = ?$)

Exercise 4-1

Four vectors are oriented as shown in figure, where $A = 2\text{m}$, $B = 4\text{m}$, $C = 3\text{m}$, and $D = 3\text{m}$. Find

- the components R_x and R_y of the resultant vector $\vec{R} = \vec{A} + \vec{B} + \vec{C} - \vec{D}$.
- the magnitude and direction of the resultant vector $\vec{R} = \vec{A} + \vec{B} + \vec{C} - \vec{D}$



