مدونة المناهج السعودية

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الموقع التعليمي لجميع المراحل الدراسية

في المملكة العربية السعودية

HOMEWORK CHAPTER 3

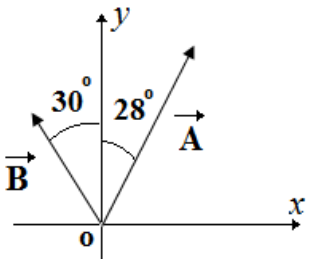
Question 1:

A vector $\vec{A}$ is given by the components : $A_x = -3\ cm$ and $A_y = -5\ cm$.

a- Write $\vec{A}$ in terms of unit vectors $\hat{\imath}$ and $\hat{\jmath}$.
b- To which quarter does $\vec{A}$ belong ?
c- Calculate the magnitude of $\vec{A}$.
d- Calculate the direction of $\vec{A}$ by giving its θ_A.

Question 2:

The magnitudes of the vectors $\vec{A}$ *and* $\vec{B}$ in the figure below, are respectively a $= 40$ *and* $B = 30$.



a- Find the components of each vector.
b- Find those of $\vec{A} + \vec{B}$ and $\vec{B} - \vec{A}$

Question 3:

Which of the following vectors is a unit vector?

a) $\vec{u} = \hat{x} - \hat{y}$ b) $\vec{v} = \frac{1}{3}\hat{x} - \frac{2\sqrt{2}}{3}\hat{y}$ c) $\vec{w} = 2\hat{x} - \hat{y}$

Question 4:

Given the vectors $\vec{A} = 2\hat{x} + 5\hat{y}$ and $\vec{B} = -\hat{x} + 3\hat{y}$. Find the magnitude and the direction of the following vectors:

a) $\vec{C} = -\vec{A} + 3\vec{B}$
b) $\vec{D} = 2\vec{A} - 3\vec{B}$
c) $\vec{E} = \vec{C} + \vec{D}$

Question 5:

A car travels 8 km due west in 10 minutes and then 12 km due north in 20 minutes. Find :

a- the total displacement of the car.
b- the average velocity of the car.
c- the average speed of the car.

Question 6: {Example 5 P 75}

A position of a particle as a function of time is given by :

$\vec{r} = [(5.0\ m/s)t + (6.0\ m/s^2)t^2]\hat{\imath} + [7.0\ m - (3.0\ m/s^3)t^3]\hat{\jmath}$ where r is in meters and t in seconds

a- What is the particle's displacement between $t_1 = 2.0s$ *and* $t_2 = 3.0s$?
b- Determine the velocity and acceleration of the particle as function of time
c- Evaluate $\vec{v}$ and $\vec{a}$ at $t = 3.0\ s$