بسم الله الرحمن الرحيم

Chapter (3) : Vectors

Question (1 – 5 – 19 – 31 – 33 – 35) page (71 – 72 – 73)

Section 3.1 Coordinate Systems

1- The polar coordinates of a point are r = 5.50 m and θ= 240°. What are the Cartesian coordinates of this point?

2- If the rectangular coordinates of a point are given by (2, y) and its polar coordinates are (r, 30°), determine y and r.

Section 3.4 Components of a Vector and Unit Vectors

3- A vector has an x component of (- 25.0) units and a y component of 40.0 units. Find the magnitude and direction of this vector

4- Consider the two vectors $\mathbf{A} = 3\hat{i} - 2\hat{j}$ **and** $\mathbf{B} = -\hat{i} - 4\hat{j}$. Calculate

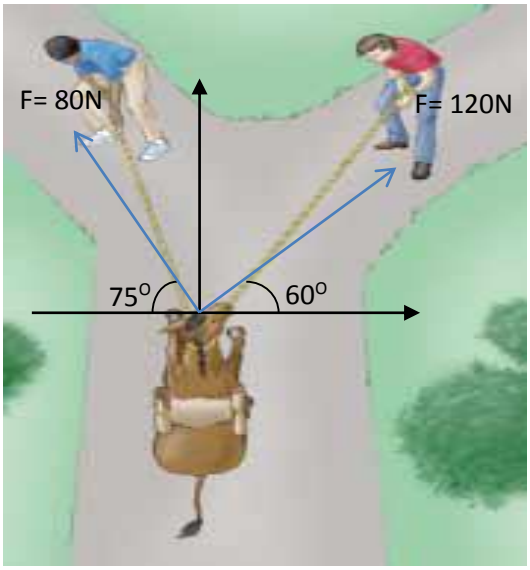
(a) $\mathbf{A} + \mathbf{B}$
(b) $\mathbf{A} - \mathbf{B}$
(c) $|\mathbf{A} + \mathbf{B}|$
(d) $|\mathbf{A} - \mathbf{B}|$
(e) the directions of $\mathbf{A} + \mathbf{B}$ and $\mathbf{A} - \mathbf{B}$.

5- A particle undergoes the following consecutive displacements: 3.50 m south, 8.20 m northeast, and 15.0 m west. What is the resultant displacement?

6- The helicopter view in Fig. shows two people pulling on a stubborn mule. Find

(a) the single force that is equivalent to the two forces shown,

(b) the force that a third person would have to exert on the mule to make the resultant force equal to zero. The forces are measured in units of Newton (abbreviated N).



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