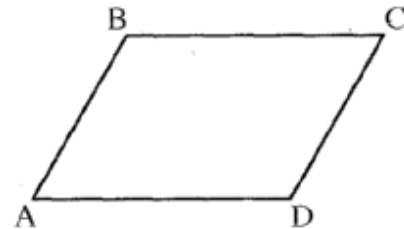


VECTORS

SET 1

- 1 A is the point $(-3,2,4)$ and B is $(-1,3,2)$. Find,
- the components of vector \overrightarrow{AB} ,
 - the length of \overrightarrow{AB} .
- 2 (a) Show that the points $L(-5,6,-5)$, $M(7,-2,-1)$ and $N(10,-4,0)$ are collinear.
(b) Find the ratio in which M divides LN.

- 3 A is the point $(2,-1,4)$, B is $(7,1,3)$ and C is $(-6,4,2)$.
If ABCD is a parallelogram, find the coordinates of D.



- 4 Show that the vectors $\mathbf{a} = 2\mathbf{i} + 3\mathbf{j} - \mathbf{k}$ and $\mathbf{b} = 3\mathbf{i} - \mathbf{j} + 3\mathbf{k}$ are perpendicular.
- 5 The vectors \mathbf{a} , \mathbf{b} and \mathbf{c} are defined as follows:
- $$\mathbf{a} = 2\mathbf{i} - \mathbf{k} \qquad \mathbf{b} = \mathbf{i} + 2\mathbf{j} + \mathbf{k} \qquad \mathbf{c} = -\mathbf{j} + \mathbf{k}$$
- Evaluate $\mathbf{a} \cdot \mathbf{b} + \mathbf{a} \cdot \mathbf{c}$.
 - From your answer to (a) make a deduction about the vector $\mathbf{b} + \mathbf{c}$.

- 6 The diagram shows representatives of two vectors, \mathbf{a} and \mathbf{b} , inclined at an angle of 60° .
If $|\mathbf{a}| = 2$ and $|\mathbf{b}| = 3$, evaluate $\mathbf{a} \cdot (\mathbf{a} + \mathbf{b})$.

