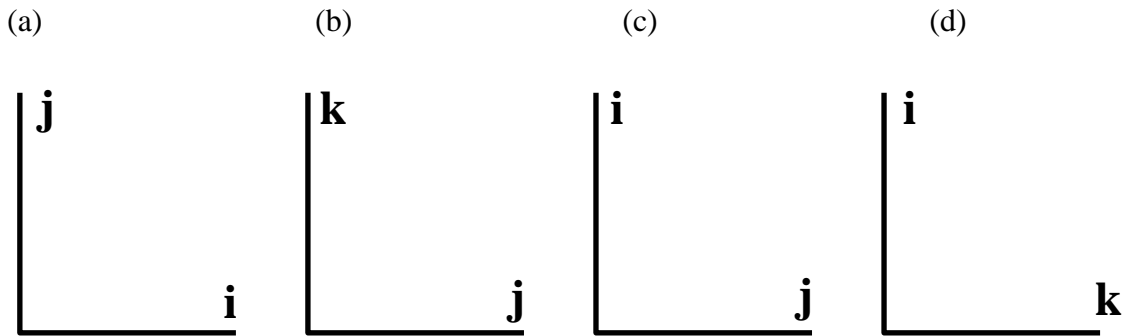


## *Vectors 2*

1. The unit vectors  $\mathbf{i}$ ,  $\mathbf{j}$ , and  $\mathbf{k}$  form a right-handed set. In each of the following pictures showing two of these unit vectors, determine whether the third vector points into or out of the paper.



The vectors in question 2 to 6 are defined as  $\mathbf{A} = 2\mathbf{i} + \mathbf{j} - 3\mathbf{k}$ ,  $\mathbf{B} = 7\mathbf{i} - 2\mathbf{j} + 4\mathbf{k}$  and  $\mathbf{C} = 4\mathbf{i} + 5\mathbf{k}$ .

2. Find the magnitudes of  $\mathbf{A}$ ,  $\mathbf{B}$ , and  $\mathbf{C}$ .
3. Find the unit vectors corresponding to
 

(a) $\mathbf{A}$	(b) $\mathbf{C}$	(c) $\mathbf{A} + \mathbf{B}$
------------------	------------------	-------------------------------
4. Find the following scalar products
 

(a) $\mathbf{A} \cdot \mathbf{B}$	(b) $\mathbf{B} \cdot \mathbf{C}$	(c) $\mathbf{C} \cdot \mathbf{A}$
-----------------------------------	-----------------------------------	-----------------------------------
5. Find the following vector products
 

(a) $\mathbf{A} \times \mathbf{B}$	(b) $\mathbf{C} \times \mathbf{B}$	(c) $\mathbf{A} \times \mathbf{C}$
------------------------------------	------------------------------------	------------------------------------
6. From the answers to question 4, deduce the angle between the vectors in each case.
7. In the following cases determine if  $\mathbf{p} \times \mathbf{q}$  is directed into or out of the paper.

