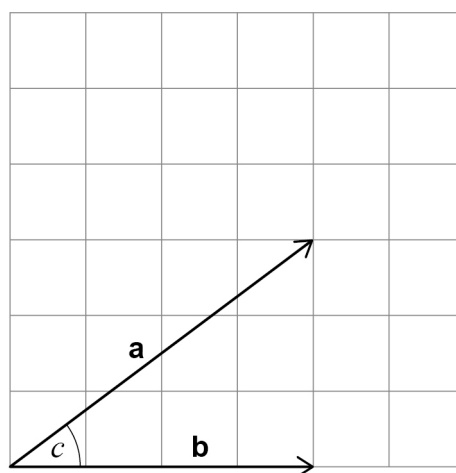


|   |   |
|---|---|
| 0 | 1 |
|---|---|

**Figure 1** shows two vectors **a** and **b** and the angle between them,  $c$ .

**Figure 1**



$$\mathbf{a} = [4, 3]$$
$$\mathbf{b} = [4, 0]$$

The magnitude of a vector, represented as an arrow, is the length of the arrow. The magnitude of vector **a** is 5 because  $\sqrt{4^2 + 3^2} = 5$

|   |   |   |   |
|---|---|---|---|
| 0 | 1 | . | 1 |
|---|---|---|---|

What is the magnitude of vector **b**?

[1 mark]

|   |   |   |   |
|---|---|---|---|
| 0 | 1 | . | 2 |
|---|---|---|---|

Calculate the dot product of vectors **a** and **b**. You should show your working.

[2 marks]

The angle between two vectors cannot be larger than  $180^\circ$ . If the angle is measured as being greater than  $180^\circ$  then this angle is subtracted from  $360^\circ$  to find the actual angle between the two vectors.

Example: if an angle between two vectors represented as arrows is measured as being  $240^\circ$  then the angle between the two vectors is  $360^\circ - 240^\circ = 120^\circ$

0 1 . 3

Describe what will happen to the angle  $c$  and the magnitude of vector **a** when vector **a** is multiplied by the scalar 2

**[2 marks]**

0 1 . 4

Describe what will happen to the angle  $c$  and the magnitude of vector **a** when vector **a** is multiplied by the scalar -1

**[2 marks]**