InkMaths

QUESTION WORKBOOK

Vectors in two dimensions

Vectors · Year 12–13

7 questions · 22 marks

PRINT EDITION

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SECTION A · Warm-up

A1 Find the magnitude of $a = 5i + 12j$, and the unit vector in the direction of a. [2]

A2 Given $p = 2i - 3j$ and $q = -i + 4j$, find $2p + 3q$. [2]

A3 Find the magnitude of $7i - 24j$, and the angle it makes with the positive x-direction, to 1 decimal place. [3]

SECTION B · Standard

B1 The points A(−2, 3) and B(4, −5) have position vectors a and b respectively. Find the vector AB, the distance AB, and the midpoint of AB. [4]

B2 The vectors $4\mathbf{i} + 6\mathbf{j}$ and $6\mathbf{i} + \lambda\mathbf{j}$ are parallel. Find the value of λ. [3]

B3 Find the two vectors of magnitude 26 that are parallel to $5\mathbf{i} - 12\mathbf{j}$. [3]

SECTION C · Stretch

C1 Relative to an origin O, the points A and B have position vectors $\mathbf{a} = \mathbf{i} + 6\mathbf{j}$ and $\mathbf{b} = 16\mathbf{i} + 12\mathbf{j}$. The point P lies on the line segment AB and divides it so that AP : PB = 1 : 2. Find the position vector of P, and hence find $|\overrightarrow{OP}|$. [5]