InkMaths

QUESTION WORKBOOK

Vectors in two dimensions

Vectors · Year 12-13

8 questions · 20 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. [2]

SECTION B · Standard

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

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 For $\mathbf{a} = 3\mathbf{i} + 4\mathbf{j}$ and $\mathbf{b} = 6\mathbf{i} + 8\mathbf{j}$, show that $|\mathbf{a} + \mathbf{b}| = |\mathbf{a}| + |\mathbf{b}|$, and state the geometric condition under which this equality happens. [2]

C2 Show that the points A(1, 2), B(4, 8) and C(6, 12) lie on a single straight line. [3]