



QUESTION WORKBOOK

Intersections, angles and distances

Further vectors · Year FM

6 questions · 20 marks

PRINT EDITION

SECTION A · Warm-up

A1 Find the point where the line $r = (2, 0, 1) + \lambda(1, 2, 2)$ meets the plane $x + y + z = 13$.

[3]

A2 State, with the correct trig function in each case, how to find the angle between a line and a plane, and between two planes.

[2]

SECTION B · Standard

B1 Find the acute angle between the line with direction $(1, 2, 2)$ and the plane $x + y + z = 13$, to one decimal place.

[4]

B2 Find the perpendicular distance from the point $(1, 2, 3)$ to the plane $2x - y + 2z = 3$.

[3]

B3 Find the acute angle between the planes $x + z = 4$ and $y + z = 7$. [4]

SECTION C · Stretch

C1 The line $r = (0, 0, 5) + \lambda(1, -1, 0)$ and the plane $x + y + z = 1$ have direction and normal satisfying $\mathbf{b} \cdot \mathbf{n} = 0$. Explain what this means geometrically, and determine whether the line lies in the plane or is parallel to it at a distance. [4]