

Advanced Higher Maths
SQA 2021 Paper 2
Question 12



The points A(4, 0, 8), B(6, -5, 4) and C(3, 4, 11) all lie on the plane π_1 .

(a) Find the Cartesian equation of π_1 . 4

The plane π_2 is parallel to π_1 and passes through the origin.

(b) State the equation of π_2 . 1

A sphere touches π_1 , where A is the point of contact. The sphere also has a single point of contact, Q, with π_2 .

(c) (i) Find parametric equations for the line AQ. 1

(ii) Hence find the coordinates for Q. 2

Answers:

(a) $x - 2y + 3z = 28$

(b) $x - 2y + 3z = 0$

(c) (i)
$$\begin{cases} x = 4 + t \\ y = -2t \\ z = 8 + 3t \end{cases}$$

(ii) $(2, 4, 2)$