

MCV4U - Lines and Planes Assignment

Due date: Email to Mr. Elliott by Monday June 1st, 5:00pm

Each question is worth 10 marks.

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1. Given points A(1,2,3), B(0,-3,-2) and C(-1,0,5):
 - a) Determine vector, parametric and symmetric equations of the line that goes through points A and B. Then, find the coordinates of 2 additional points on this line.
 - b) Determine vector and scalar equations of the plane that contains points A, B and C. Then, find the coordinates of 2 additional points on this plane.

2. Consider the line $\frac{x}{3} = \frac{y-5}{4} = z + 2$ and the line $(x, y, z) = (-2, 0, -2) + t(-1, 1, -1)$.
 - a) Find the point of intersection between these 2 lines.
 - b) Find the angle of intersection between these 2 lines.
 - c) Find the scalar equation of the plane containing these 2 lines.

3. Find the intersection between the plane $3x - y + 2z + 1 = 0$. and:
 - a) the line $x = s, y = -1 + 2s, z = -3 + 3s$
 - b) the plane $2x + 2y + 2z - 1 = 0$.

4. Determine the scalar equation of the plane that passes through (5, -5, 5) and is perpendicular to the line of intersection of the planes $3x + y - z = 0$ and $4x - y + 2z - 7 = 0$