

M233 Spring 2004 Homework Assignment 1

Due: 13 February 2004

1. Find the symmetric equations of the line that passes through $(1, 0, 1)$ and $(2, 1, 0)$.
2. Find the symmetric equations of the line of intersection of the two given planes, $x + 2y - z = 0$ and $2x - y - z = 1$.
3. Find the point of intersection of the given plane and the given line: $x - 3y + 5z = 19$ and $x = y + 1 = z/2$.
4. A point $Q = (2, -3, 6)$ and a plane \mathcal{V} : $2x - 5y + 7z = 4$ are given. Compute the distance of Q to \mathcal{V} as follows: first find the line through Q that is perpendicular to \mathcal{V} ; next, find the point R of intersection of this line and \mathcal{V} ; finally, calculate the distance from Q to R to obtain the distance between Q and \mathcal{V} .
5. Referring to Q and \mathcal{V} of the preceding problem, use the method of vector projection to calculate the distance between Q and \mathcal{V} .