

Name: _____

Quiz 4 – Calc 3 (Distances)

This is a take-home quiz. You may use any resource you like, but you must complete it on your own. It is due on Friday: print it out, answer all questions, and bring it to Friday's class.

1. Compute the line of intersection between the planes $x - 3z = 6$ and $x + 2y + 3z = 6$
2. Compute the distance between the point $P(3,3,3)$ and the plane $x + 4y + 3z = 1$
3. Find the distance between the point $P(-4, -2, -1)$ and the line $l(t) = \langle 2t, -3t, 1 + 4t \rangle$
4. What is the distance between the plane $x + y - z = 4$ and
 - a. the line $l(t) = \langle 1, 3, 2 \rangle + t \langle 1, -2, 3 \rangle$
 - b. the line $l(t) = \langle 1, 3, 2 \rangle + t \langle 1, 1, 2 \rangle$
5. Show that the distance between the point $P(3, 1, -2)$ and the plane $x + 4y + 3z = 1$ is zero. Then explain this answer geometrically. *Hint: what is special about the point $P(3, 1, -2)$ in relation to the plane $x + 4y + 3z = 1$?*