Soal untuk Tutorial 6 Aljali SI dan IF TA 2022/2023

1. Determine whether the given planes are parallel: $4x - y + 2z = 5$ and $7x - 3y + 4z = 8$.
2. Determine whether the given planes are perpendicular $3x - y + z - 4 = 0$, $x + 2z = -1$.
3. Find $||\text{proj}_a u||$ dari $\mathbf{u} = (1, -2)$, $\mathbf{a} = (-4, -3)$.
4. Find the vector component of **u** along **a** and the vector component of **u** orthogonal to **a**.
5. Find the distance between the point $(-3, 1)$ and the line $4x + 3y + 4 = 0$.
6. Find the distance between the point $(3, 1, -2)$ and the plane $x + 2y - 2z = 4$.
7. Find the distance between the given parallel planes: $2x - y - z = 5$ and $-4x + 2y + 2z = 12$.
8. Find vector and parametric equations of the line containing the point and parallel to the vector: Point: $(-4, 1)$; vector: $v = (0, -8)$.
9. Find vector and parametric equations of the plane that contains the given point and is parallel to the two vectors: Point: $(-3, 1, 0)$; vectors: $v1 = (0, -3, 6)$ and $v2 = (-5, 1, 2)$.
10. Find the general solution to the linear system and confirm that the row vectors of the coefficient matrix are orthogonal to the solution vectors.

$$\begin{aligned} x_1 + x_2 + x_3 &= 0 \\ 2x_1 + 2x_2 + 2x_3 &= 0 \\ 3x_1 + 3x_2 + 3x_3 &= 0 \end{aligned}$$