Practice Problems on Section 10.5

1. Find parametric equations of the line containing the points \( A = (-6, 4, 0) \) and \( B = (-8, 3, 5) \).

2. Find symmetric equations of the line containing the points \( A = (-6, 4, 0) \) and \( B = (1, 4, 0) \).

3. Find parametric equations of the line containing the point \( A = (5, 4, 1) \), and parallel to the line \( \frac{x+3}{5} = 2z, \ y = 7 \).

4. Find
   a) parametric equations and
   b) symmetric equations
      of the line containing the point \( P = (-1, 2, 0) \) and perpendicular to the plane containing the points \( A = (1, 4, -1), \ B = (-3, 3, 2), \) and \( C = (0, 5, -2) \).

5. Find an equation of the plane passing through the points \( A = (1, 4, -1), \ B = (-3, 3, 2), \) and \( C = (0, 5, -2) \).

6. Find symmetric equations of the line containing the point \( A = (-3, -4, 2) \) and perpendicular to the plane \( y - x + 3z = -9 \).

7. Find parametric equations of the line of intersection of the planes \( x - 6y + 3z = 1 \) and \( z - x - y = 3 \).

8. Find an equation of the plane containing the point \( A = (5, 4, 1) \), and the line \( x + 3 = \frac{z}{2}, \ y = 7 \).

9. Find an equation of the plane containing the point \( A = (0, 6, -3) \), and perpendicular to the planes \( x - y + 7z = 1 \) and \( 2x - 3y - z = 5 \).

10. Determine if the lines \( l_1 \) and \( l_2 \) are parallel, intersecting or skew. If the lines are intersecting, find the point of intersection.

   a) The line \( l_1 \) is given by parametric equations \( x = 2t - 1, \ y = 2 - t, \ z = 5t + 4 \) and the line \( l_2 \) is given by symmetric equations: \( \frac{x-3}{2} = y + 1 = \frac{z-4}{5} \)

   b) The line \( l_1 \) is given by parametric equations \( x = t - 2, \ y = 3t + 1, \ z = 3 - 4t \) and the line \( l_2 \) is given by parametric equations: \( x = 2t + 5, \ y = 6 - 2t, \ z = t - 7 \)

11. Find the distance from the point \( A = (-3, 4, 1) \) to the line \( x = 3t + 1, \ y = t - 1, \ z = 3 \). (You do not have to simplify your answer)
12. Find the distance from the point $A = (1, 4, -1)$ to the plane $2x - 3y + z = 8$.

13. Find the distance between the line $x = 5 - t$, $y = 2t$, $z = 3 - t$ and the plane $y - x + 3z = -9$.

14. Find the distance between two planes $x - y + 2z = 1$ and $2y - 2x - 4z = 1$.

15. Find the distance between two lines $x = 5 - 2t$, $y = 2$, $z = 3 - 4t$ and $x + 3 = \frac{z}{2}$, $y = 7$. (You do not have to simplify your answer).

16. Find the distance between two lines $3x = 2y + 4 = \frac{z-1}{4}$ and $\frac{x+3}{2} = \frac{z}{6}$, $y = 2$. 