# MATH 200 - SEC 201 - 2010W

# Assignment no. 1

## Due: 9am, Jan 19, 2011

1. Determine whether the center of the sphere $x^2 + 2x + y^2 + z^2 = 6y + 14z + 5$ lies on the line $(2, 0, 1) + t(-1, 1, 2)$.

2. What is the angle between the line $x = y = z$ and the following planes?

    (a) $x + y + z = 7$

    (b) $x + y = 3$

    (c) $2x - y - z = 0$

    (d) $x - y = 2$

3. Find the line which passes through the point $(7, 1, 2)$ and is orthogonal to the plane $x = y$. Present both the vector equation and the symmetric equations of the line.

4. Determine whether the following two planes intersect or are parallel. If they intersect, find the equation of the line of intersection, if they are parallel, find the distance between them. Plane A: $x + y + z = 1$; Plane B: $(0, 0, 7) + s(1, -1, 0) + t(0, 1, -1)$.

5. Find the equations of the two planes which contain the points $(1, 1, 1)$ and $(1, -2, 4)$ and are tangent to the sphere of radius 1 around the origin.