1. Determine parametric equations of the line passing through $P(5,0,-2)$ and parallel to the planes $\pi_1 : x-4y+2z=0$ and $2x+3y-z+1=0$.

2. Determine an equation of the plane containing $P(2,0,3)$ and the line $\ell : x=-1+t, y=t, z=-4+2t, t\in\mathbb{R}$.

3. For the points $A(2,1,-1)$ and $B(-3,0,2)$, determine

a) an equation of the bundle of planes passing through A and B,

b) the plane π from the bundle, which is orthogonal to Oxy,

c) the plane ρ from the bundle, which is orthogonal to π.

4. Determine the relative positions of the lines $x=-3t, y=2+3t, z=1, t\in\mathbb{R}$ and $x=1+5s, y=1+13s, z=1+10s, s\in\mathbb{R}$.

5. Let $A(1,2,-7)$, $B(2,2,-7)$ and $C(3,4,-5)$ be vertices of a triangle. Determine the equation of the internal angle bisector of $\measuredangle A$.

6. Determine the angles between the plane $\pi_1 : x-\sqrt{2}y+z-1=0$ and the plane $\pi_2 : x+\sqrt{2}y-z+3=0$.

7. Determine the parameter m for which the line $x=-1+3t, y=2+mt, z=-3-2t$ doesn't intersect the plane $x+3y+3z-2=0$.

8. Determine the values a and d for which the line $\frac{x-2}{3}=\frac{y+1}{2}=\frac{z-3}{-2}$ is contained in the plane $ax+y-2z+d=0$.

9. Determine the values a and c for which the line $3x-2y+z+3=0\cap 4x-3y+4z+1=0$ is perpendicular to the plane $ax+8y+cz+2=0$.

10. Determine the orthogonal projection of the point $A(2,11,-5)$ on the plane $x+4y-3z+7=0$.

11. Determine the orthogonal reflection of the point $P(6,-5,5)$ in the plane $2x-3y+z-4=0$.

12. Consider the point $A(1,3,5)$ and the line $\ell : 2x+y+z-1=0\cap 3x+y+2z-3=0$.

a) Determine the orthogonal projection of A on ℓ.

b) Determine the orthogonal reflection of A in ℓ.

13. Determine the planes which pass through $P(0,2,0)$ and $Q(-1,0,0)$ and which form an angle of $60°$ with the z-axis.

14. Determine the orthogonal projection of the line $\ell : 2x-y-1=0\cap x+y-z+1=0$ on the plane $\pi : x+2y-z=0$.

15. Determine the coordinates of a point A on the line $\ell : \frac{x-1}{2}=\frac{y}{3}=\frac{z+1}{1}$ which is at distance $\sqrt{3}$ from the plane $x+y+z+3=0$.

16. The vertices of a tetrahedron are $A(-1,-3,1)$, $B(5,3,8)$, $C(-1,-3,5)$ and $D(2,1,-4)$. Determine the height of the tetrahedron relative to the face ABC.