1. (6 points) Find parametric equations for the line in $\mathbb{R}^3$ that passes through the points $(8, -7, 3)$ and $(9, 6, -7)$.

2. (10 points) Find an equation of the plane in $\mathbb{R}^3$ through the point $(0, 5, 2)$ that contains both $\mathbf{i} + \mathbf{j}$ and $\mathbf{j} + \mathbf{k}$. 
3. (10 points) Find a vector equation for the line of intersection for the planes $3x - 2y + z = 1$ and $2x + 6y + z = 1$.

4. (12 points) Find an equation of the plane that passes through the points $P = (-1, -5, 4)$, $Q = (0, -8, 10)$ and $R = (-3, -5, -7)$. 
5. (12 points) Uses traces to sketch the quadric surface \( \frac{x^2}{9} + \frac{y^2}{16} - z^2 = 1 \). Identify the traces for at least three values of \( x \), \( y \) and \( z \) each, then sketch the quadric surface.