1. Please indicate True or False.
   (a) T / F : The planes \( x + 2y + 3z = 1 \) and \( x + 2y + 3z = -1 \) are orthogonal.
   (b) T / F : \( \phi = \frac{\pi}{2} \) in spherical coordinates describes the \( xy \)-plane.
   (c) T / F : The first octant can be describe in spherical coordinates as \( 0 \leq \phi \leq \pi, 0 \leq \theta \leq \pi \).
   (d) T / F : \( x = \rho \cos \theta \cos \phi \) is a conversion between spherical and rectangular coordinates.

2. The points \((1, 2, 3)\) and \((3, 2, 1)\) are on the line \( r(t) = (2t - 3, 2, 7 - 2t) \). Find an equation for the plane containing the line \( r(t) \) and the origin.

3. Find a vector representation for the curve of intersection of the cylinder \( x^2 + y^2 = 4 \) and the plane \( x + y + z = 2 \).
4. Provide a reasonably clear sketch of the following traces for the quadric surface \( x^2 + z^2 = y^2 - 1 \) in the specified planes.

- **xy-plane**
- **xz-plane**
- **yz-plane**
- The plane \( y = \sqrt{5} \)

5. Based on the traces you found above, identify the graph of \( x^2 + z^2 = y^2 - 1 \) from the choices below by circling the Figure number.

- Figure 1:
- Figure 2:
- Figure 3: