1. Consider the planes $x + y + z = 1$ and $x - 3y + 2z = 3$.
   a) Find the line of intersection.
   b) Find the angle between the planes.

2. Because of a storm, ground controllers instruct the pilot of a plane flying at an altitude of 4 miles to make a 90° turn and climb to an altitude of 4.8 miles. The model for the path of the plane during this maneuver is

$$\mathbf{r}(t) = \langle 10\cos 2.5\pi t, 10\sin 2.5\pi t, 4t \rangle, \quad 0 \le t \le .2$$

   a) Find the speed of the plane as a function of time.
   b) Find $a_\mathbf{T}$ and $a_\mathbf{N}$.
   c) How far does the plane travel during the interval given here?

3. A surface is given in cylindrical coordinates: $z^2 - r^2 = 1$.
   a) Write in cartesian coordinates.
   b) Sketch.

4. Find the distace between the point $(1, 2, 3)$ and the plane $x + y + z = 1$.