Use MATLAB to do the following problems. Note that they can easily be done by hand.

1. Find a unit vector in the direction of $(1, -2, 4)$.

2. Find an equation of the plane which contains the lines

   \[
   \frac{x - 3}{4} = \frac{y}{3} = \frac{z + 1}{3} \quad \text{and} \quad \frac{x - 1}{2} = \frac{y + 3}{3} = z + 2.
   \]

3. Find the distance between the point $(1, 2, 0)$ and the plane $(x - 1) + 2(y - 1) - 3z = 0$.

4. Find the area of the triangle with vertices $(3, 1, 0)$, $(1, 1, 1)$ and $(0, -2, -1)$.

5. Find the angle (in radians) between the vectors $(1, -2, 3)$ and $(3, 1, 4)$. Note: In MATLAB the function $\cos^{-1} x$ is \texttt{acos}(x).