

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 $(1, -3, 5)$.
2. Find an equation of the plane which contains the lines

$$\frac{x-2}{4} = \frac{y-3}{5} = \frac{z+2}{3} \text{ and } \frac{x}{2} = \frac{y+2}{3} = z+1.$$

3. Find the distance between the point $(1, 3, 1)$ and the plane $3(x-2)+2(y-1)-3(z-1) = 0$.
4. Find the area of the triangle with vertices $(3, 1, 0)$, $(1, 2, 3)$ and $(0, -1, -2)$.
5. Find the angle (in radians) between the vectors $(2, -2, 4)$ and $(4, -1, 5)$. Note: In MATLAB the function $\cos^{-1} x$ is **acos**(x).