Dr. Wolfe MATH 241 MATLAB PROJECT #1 Due February 15, 2007

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
$$\frac{x-3}{4} = y = \frac{z+1}{3} \text{ and } \frac{x-1}{2} = \frac{y+3}{3} = z+2.$$
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 **acos**(x).