MATH 114
HOMEWORK 2

Turn in by 4 March 2005 Friday class hour.

For this homework set $\mathbf{p_1} = (1, 2, 3)$, $\mathbf{p_2} = (3, 2, 1)$, $\mathbf{p_3} = (4, 7, 5)$, $\mathbf{p_4} = (3, 1, -2)$.

1.a Find an equation for the plane passing through the points $\mathbf{p_1}$, $\mathbf{p_2}$ and $\mathbf{p_3}$.

1.b Find the area of the triangle formed by the points $\mathbf{p_1}$, $\mathbf{p_2}$, and $\mathbf{p_3}$.

1.c Find the volume of the parallelepiped formed by the points $\mathbf{p_1}$, $\mathbf{p_2}$, $\mathbf{p_3}$ and $\mathbf{p_4}$. Is $\mathbf{p_1}$ in the plane formed by the points $\mathbf{p_2}$, $\mathbf{p_3}$ and $\mathbf{p_4}$?

2.a Find the distance from the point $\mathbf{p_3}$ to the line passing through the points $\mathbf{p_1}$ and $\mathbf{p_2}$.

2.b Find the distance from the point $\mathbf{p_4}$ to the plane passing through the points $\mathbf{p_1}$, $\mathbf{p_2}$ and $\mathbf{p_3}$.

Do not forget to show your work in details. Writing down only the answers is not enough.