

Quiz 1 for Calculus ++, Math 2605A1-2, August 26, 2004

Name:

This quiz is to be taken without calculators and notes of any sorts. The allowed time is 20 minutes. Provide exact answers; not decimal approximations! For example, if you mean $\sqrt{2}$ do not write 1.414...

Let P_1 be the plane passing through the points

$$\mathbf{p}_1 = \begin{bmatrix} 1 \\ 1 \\ 2 \end{bmatrix}, \mathbf{p}_2 = \begin{bmatrix} 2 \\ 1 \\ 1 \end{bmatrix}, \mathbf{p}_3 = \begin{bmatrix} 3 \\ 0 \\ 1 \end{bmatrix}.$$

Let P_2 be the plane with the equation

$$x + 2y + 3z = 6.$$

I: (3 points) Give a parametric form of the line that is formed by the intersection of P_1 and P_2 .

II: (3 points) Find the distance from the point \mathbf{p}_2 to the plane P_2 .

III (4 points) Find the distance of the point \mathbf{p}_1 to the line through \mathbf{p}_2 and \mathbf{p}_3 .

Extra credit: Find an equation for the plane containing the point $\begin{bmatrix} 1 \\ 1 \\ 2 \end{bmatrix}$ and the line
parameterized by

$$\begin{bmatrix} 2 \\ 1 \\ 1 \end{bmatrix} + t \begin{bmatrix} 1 \\ -1 \\ 0 \end{bmatrix} .$$