

Name: SOLUTIONS

Quiz #3 - September 10, 2004

1. Find the equation of the plane parallel to $x + y + z = 1$ and passing through the point $(1, 2, 3)$.

$$x + y + z = 6$$

2. Write the vector equation for the line passing through the points $(1, -2, -1)$ and $(3, -1, 2)$.

$$\langle x, y, z \rangle = \langle 1, -2, -1 \rangle + t \langle 2, 1, 3 \rangle$$

3. Find the point of intersection of the plane from #1 and the line from #2.

$x = 1 + 2t, y = -2 + t, z = -1 + 3t$, plug in

$$1 + 2t - 2 + t - 1 + 3t = 6$$

$$6t - 2 = 6$$

$$t = \frac{8}{6} = \frac{4}{3}$$

$$x = 1 + \frac{8}{3} = \frac{11}{3}, y = -2 + \frac{4}{3} = -\frac{2}{3}$$

$$z = -1 + 3 \cdot \frac{4}{3} = 3$$

$$\left\langle \frac{11}{3}, -\frac{2}{3}, 3 \right\rangle$$

~~$x = 2.5, y = -2.5, z = 1.25$~~

~~$\langle 2.5, -2.5, 1.25 \rangle$~~

4. Neatly sketch the graph of $y^2 + x^2 - z^2 = 1$.

