Problem Set 4   **Calculus 3**   **Due 10/17/03**

Each problem is worth 5 points. For full credit indicate clearly how you reached your answer.

1. Find an equation for the plane which intercepts the x, y, and z axes at a, b, and c.

2. Show that the volume of the tetrahedron bounded by the plane from problem 1 (assume a, b, and c are all positive) and the coordinate planes is equal to one third of the area of its base times its height.

3. Show that the volume of a right circular cylinder with radius r and height h is $V = \pi r^2 h$.

4. Show that the volume between the paraboloid $z = x^2 + y^2$ and the plane $z = h$ is equal to half the volume of the smallest right circular cylinder containing it.