

HOMEWORK 2, MATH 175 - FALL 2010

DUE MONDAY SEPTEMBER 13TH

This homework assignment covers Sections 13.5 - 13.6 in the book.

1. Find an equation for a plane which contains the line given by $(x, y, z) = t(1, 2, 0)$ and which forms an angle of $\pi/3$ with the xy -plane.
2. Find parametric equations for the line of intersection of the planes $x + y - z = 1$ and $3x + 2y - z = 0$. Also find the angle between these two planes.
3. Find the distance between the parallel planes $2x - 2y - 6z = 1$ and $x - y - 3z = -2$.
4. Find the cross-sections of the surface $2x^2 + 2y^2 + z^2 = 1$ in the planes $x = k$, $y = k$ and $z = k$. Sketch the surface.
5. Find the cross-sections of the surface $-x^2 - 2y^2 + 3z^2 = 1$ in the planes $x = k$, $y = k$ and $z = k$. Sketch the surface.
6. Show that the curve of intersection of the surfaces $x^2 + 2y^2 - z^2 + 3x = 1$ and $2x^2 + 4y^2 - 2z^2 - 5y = 0$ lies in a plane.
7. A surface consists of all the points P such that the distance from P to the plane $z = 1$ is the same as the distance from P to the point $(0, 1, -2)$. Find an equation for, and sketch this surface.