

MT 2800 – Calculus 3
Worksheet 12.1
Simple Surfaces

Name: _____

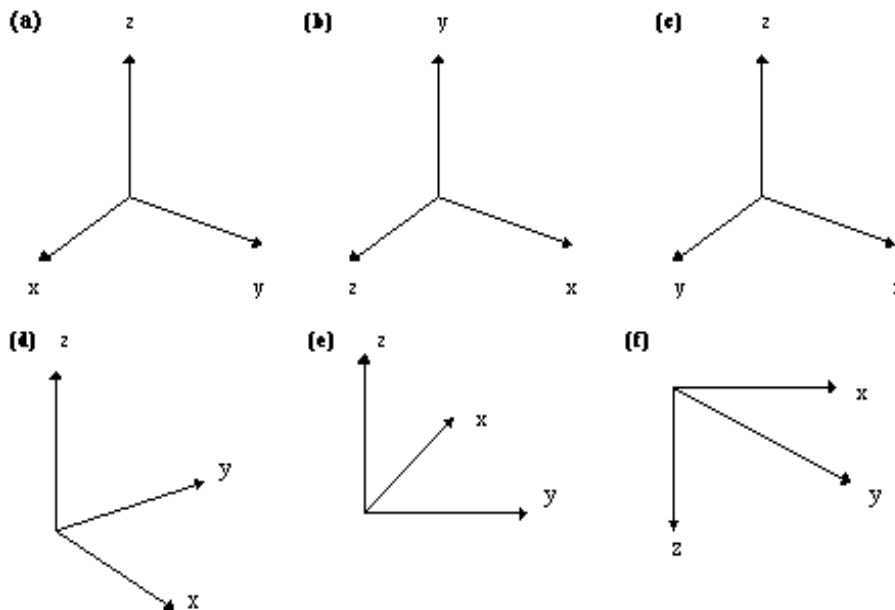
Purpose: To gain experience with graphing and visualizing surfaces in three dimensions.

Procedure: Complete this worksheet and hand it in for grading on the assigned date. You may consult with other students in the class and your instructor.

I. Right Hand Coordinate System:

Key: *positive x - axis = index finger*
 positive y - axis = middle finger
 positive z - axis = thumb

1. Circle any of the following coordinate systems that are possible views of the *right hand* coordinate system.



II. Linear Surfaces: The general (implicit) form of the equation of a **plane**:

$$ax + by + cz = d$$

1. Describe and sketch (in a 3D RH coordinate system – view of your choice) the surface given by the equation, $z = 0$ ($a = 0, b = 0, c = 1, d = 0$).

7. If a plane intersects all three axes, the easiest way to draw the plane is to find where the plane intersects each axis (3 points determine a plane!). Then use these three points and draw the portion of the plane in the first octant only ($x \geq 0$, $y \geq 0$, $z \geq 0$).

Describe and sketch the surface given by the equation, $2x + y + z = 1$.