Calculus III

Chapter 12 – 3D space and vectors

12.1 – 3D coordinate space

Right-hand rule:

X-axis points towards you

Y-axis to your right

Z-axis is up

Describing equations in 3D

* If a variable isn’t defined, it may be any value. (y=x will allow z to be anything)
* Distance is described by the Pythagorean theorem
  + Distance =
  + Circles, spheres, right triangles, and distance all follow the same equation.
* A sphere is described by the distance formula in 3 dimensions
* A cylinder is described by the dist formula (circle) in two dimensions, where z or another axis is left to be any number
* Planes can be described by drawing a line with one pair of axes, then “building a wall” by extending the line’s thickness along the free, remaining axis.