

ENG 004 Lecture 6, Oct 16, 2012

Announcements

- Turn in Homework #2 now.
- Read Chapter 3
- Homework #3 will be available after class
- No office hours Thursday, Oct 18
- Guest lecturer(s) on Thursday

Topics

Use of Grids

Geometric Modeling

Coordinates

Geometric Modeling

Units of Measure

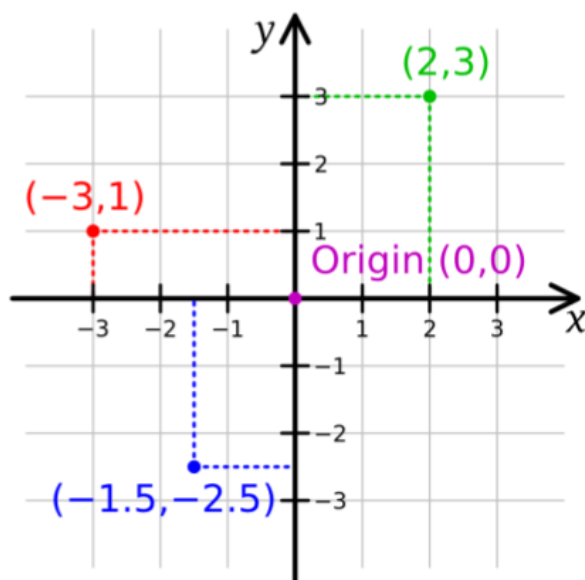
- US Customary: [in]
- International System of Units, SI (metric): [mm]

Coordinates

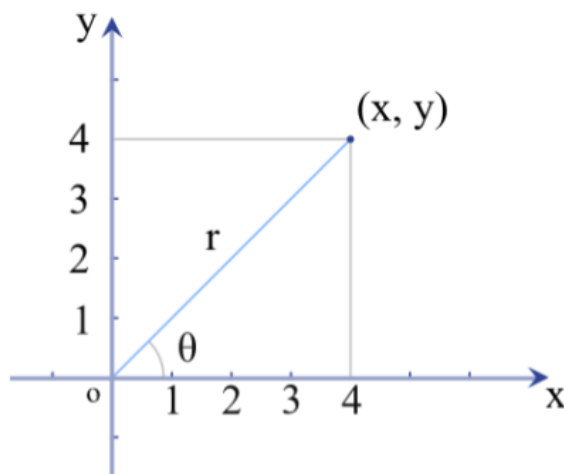
In practice, Cartesian coordinates are default in most CAD packages.

Also the right-handed orientation is used.

Cartesian Coordinate System



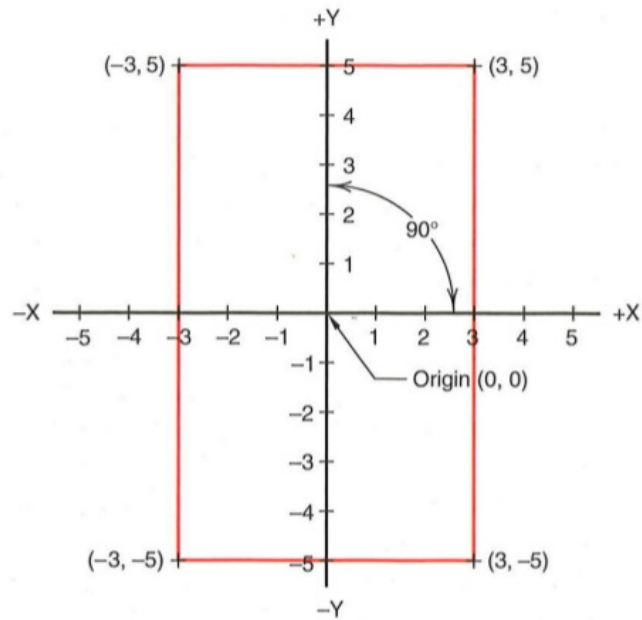
2D Coordinate Systems



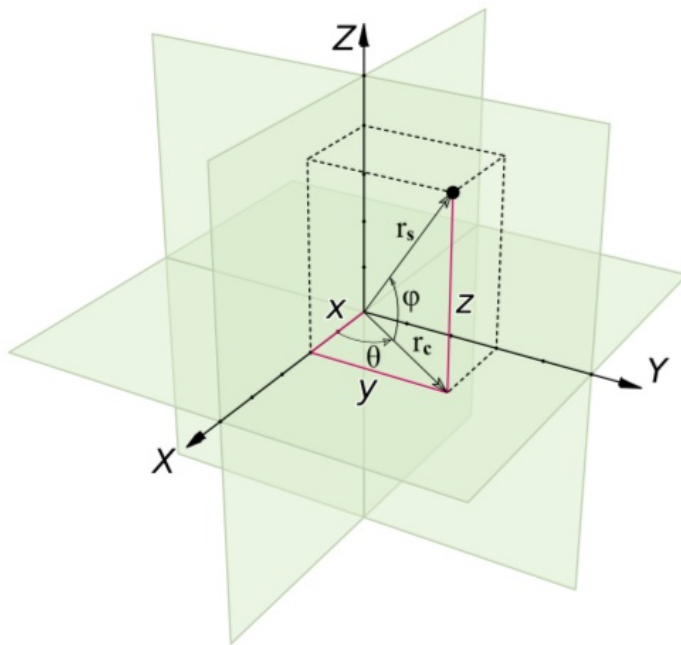
Rectangular: (x, y)

Polar: (r, θ)

2D Coordinate Systems



3D Coordinate Systems



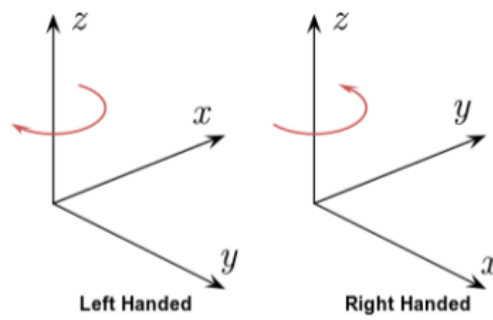
Rectangular: (x, y, z)

Cylindrical: (r_c, θ, z)

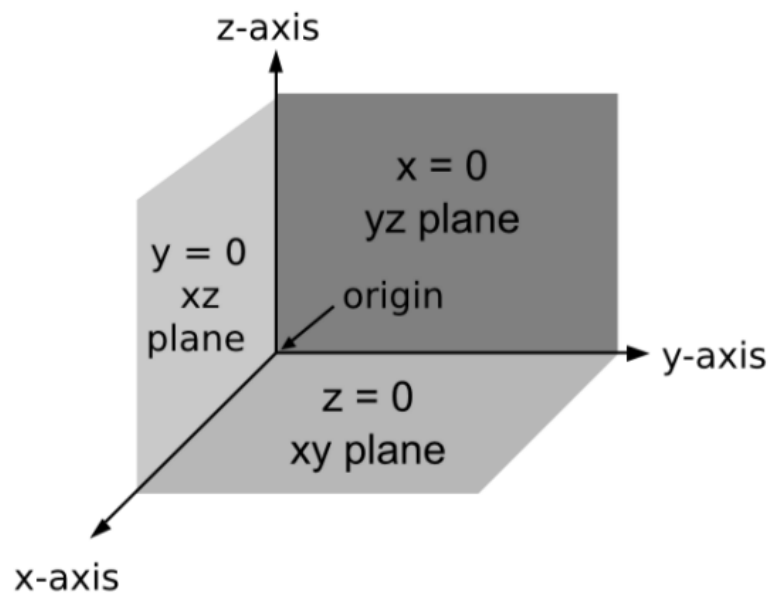
Spherical: (r_s, θ, φ)

Conventions

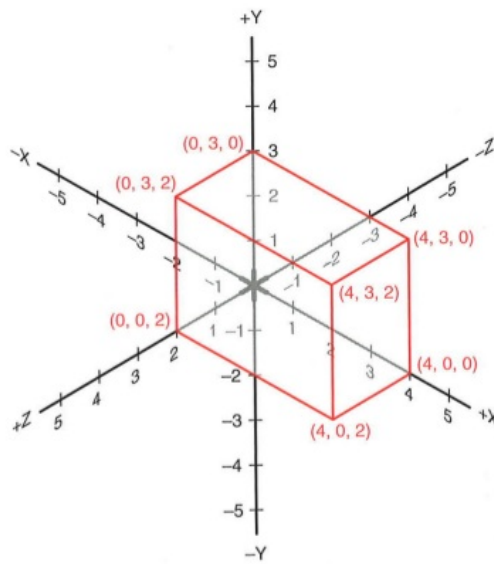
Right handed systems are the dominant convention.



Coordinate planes



3D Coordinate Systems



Grid Examples

Rectangular Grid

Isometric Grid