Module 2 - Dynamics Review

ME3050 - Dynamic Modeling and Controls

Mechanical Engineering

Tennessee Technological University

Topic 2 - Coordinate Systems

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- Using Different Coordinate Systems
- Cartesian
- Polar and Cylindrical
- Spherical

Using Different Coordinate Systems

It is often convienent to use different coordinate systems as a reference for different types of problems.

You, the engineer and designer must choose the coordinate system.

Cartesian

The Cartesian Coordinate System was invented by René Descartes in 1637. This intuitive coordinate system is still widely used today.

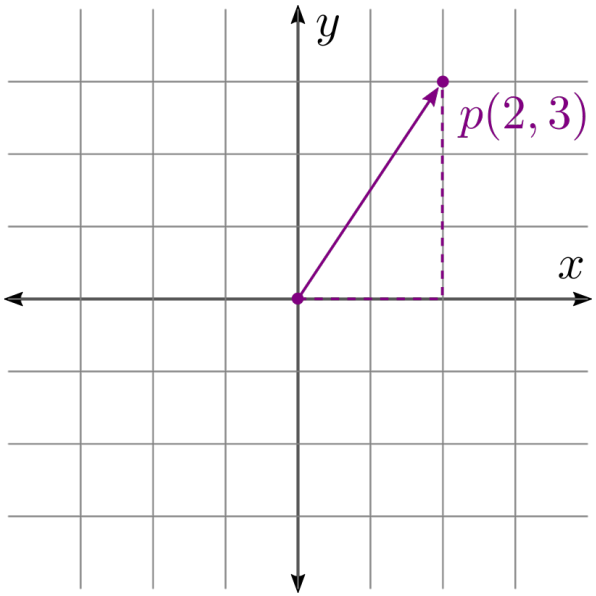
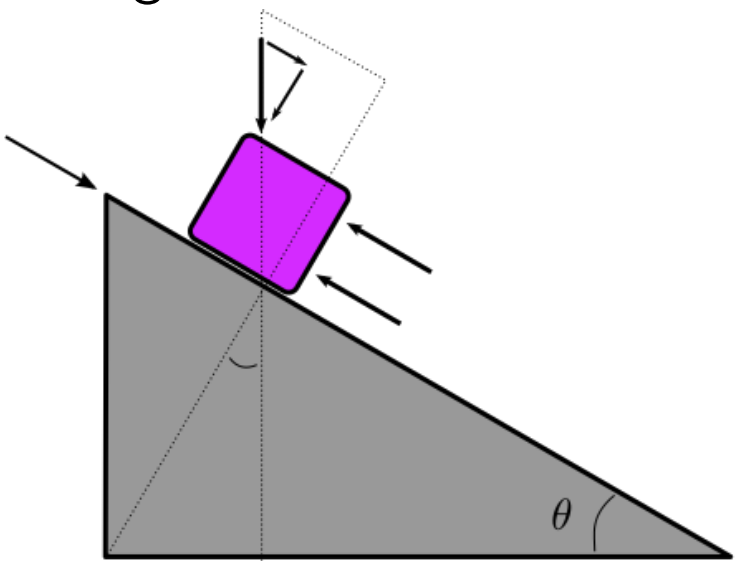


Image: Wikipedia

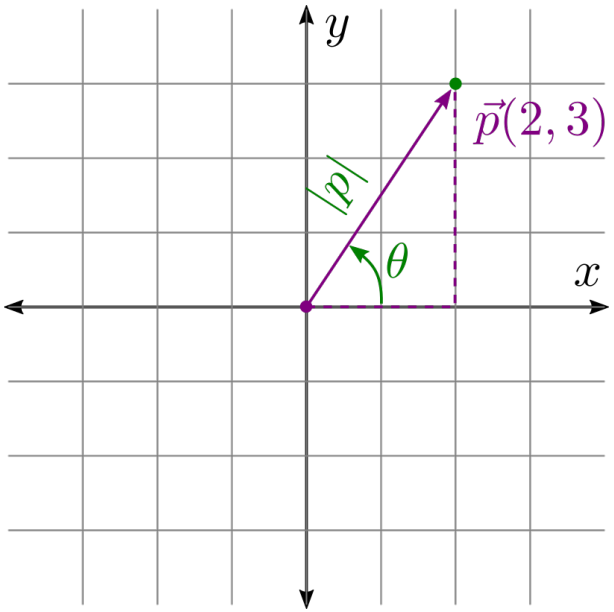
Rotated Cartesian

It is common to use a Cartesian coordinate system that has been rotated such that it is aligned with a particular problem. The sliding block is a classic example of this.



Polar and Cylindrical

For problems involving rotation it is convient to use polar or cylindrical coordinate systems. Conversion from Cartesian to polar is straightforward using trigonometry.



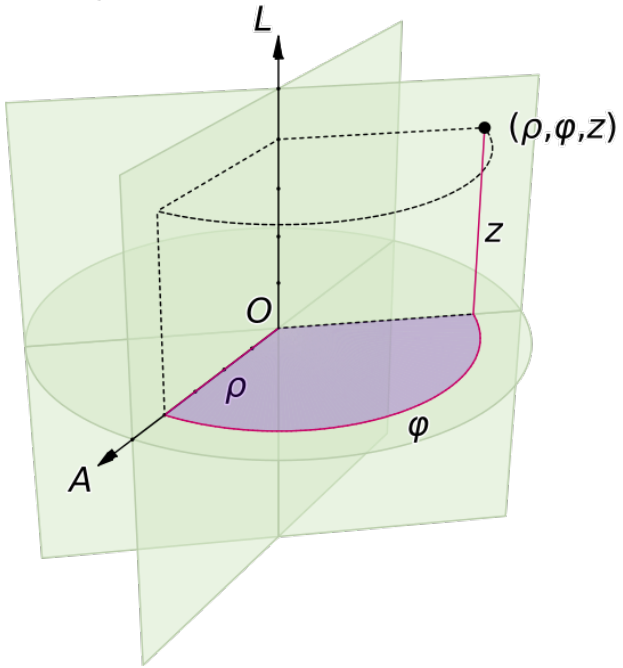
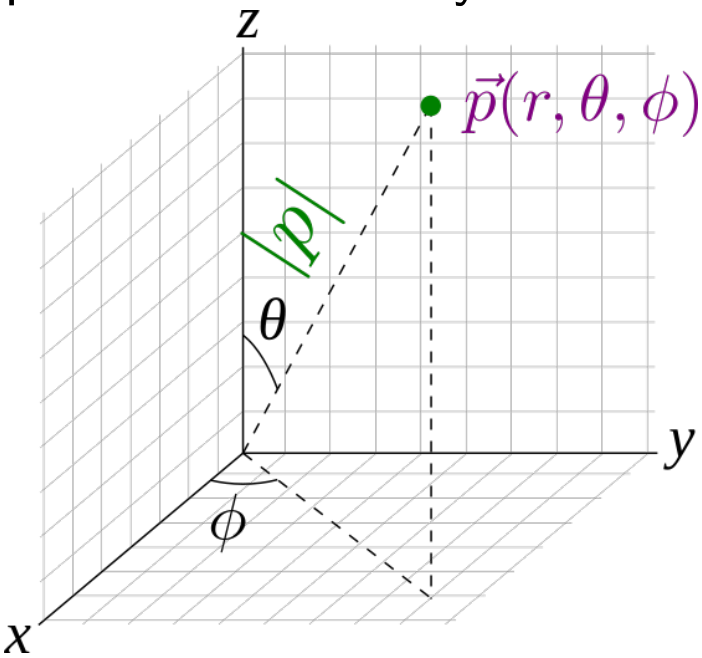


Image: Wikipedia

Spherical

"The spherical coordinate system generalizes the two-dimensional polar coordinate system..." Wikipedia



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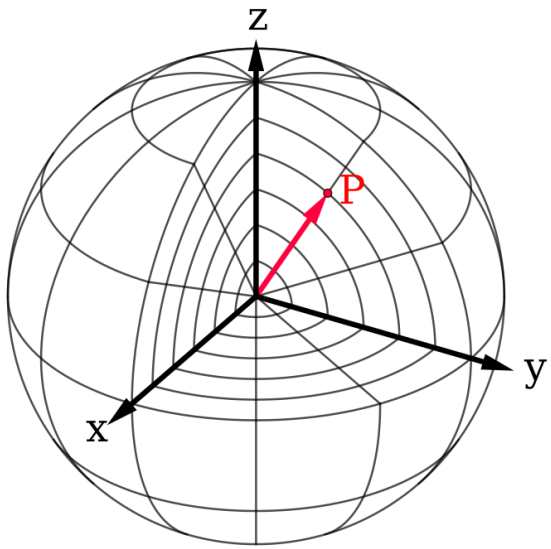

Image: Wikipedia

Others ?

Do you know of any other systems that are used?