Lecture Module - 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

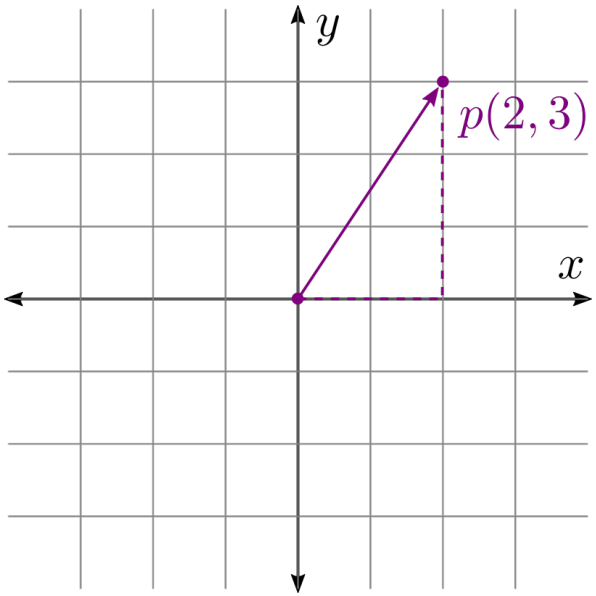
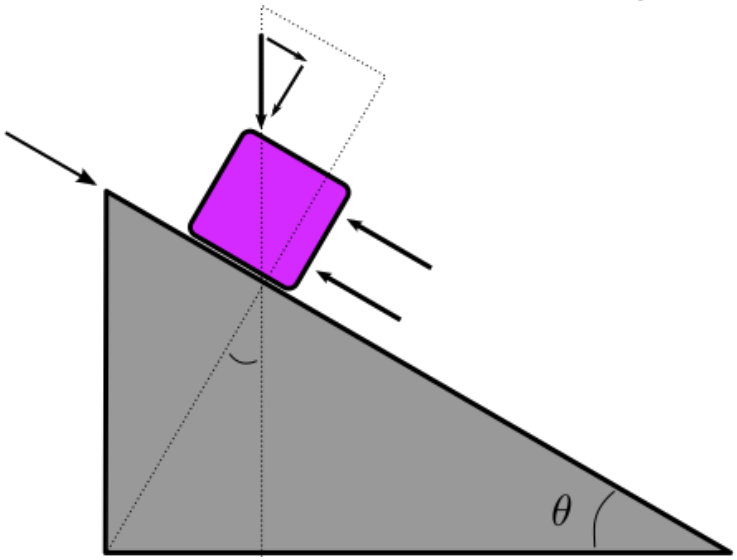


Image: Wikipedia

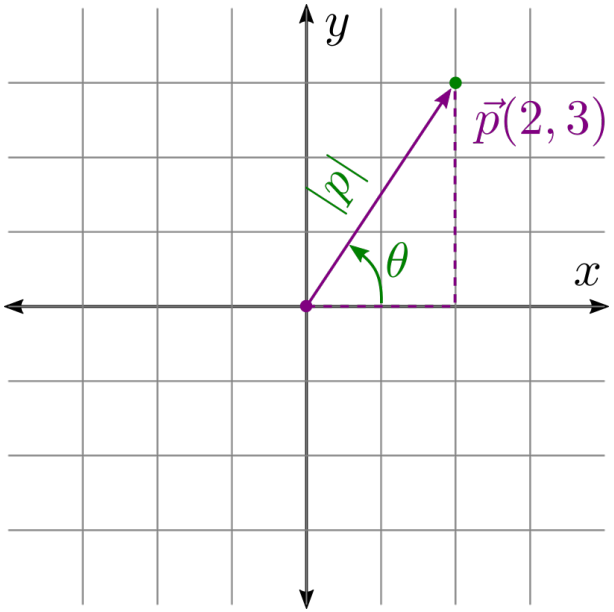
Rotated Cartesian

It is common to use a Cartesian coordinate system that has been rotated such that it is aligned with a particular problem.



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.



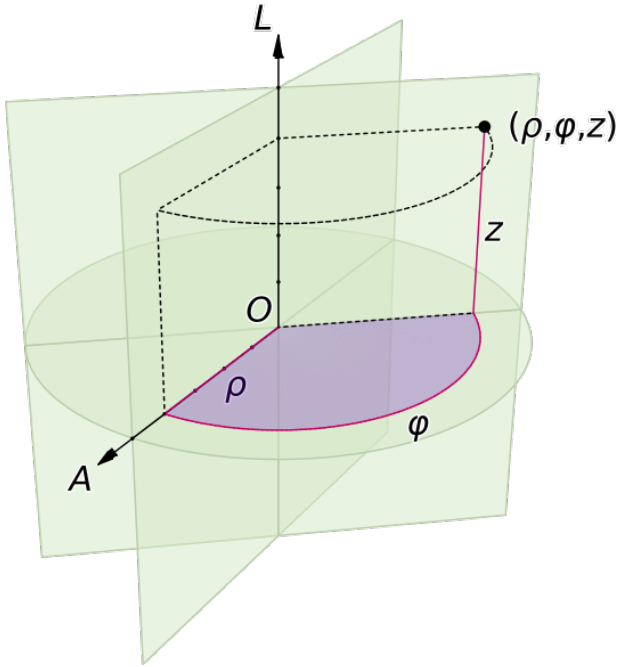
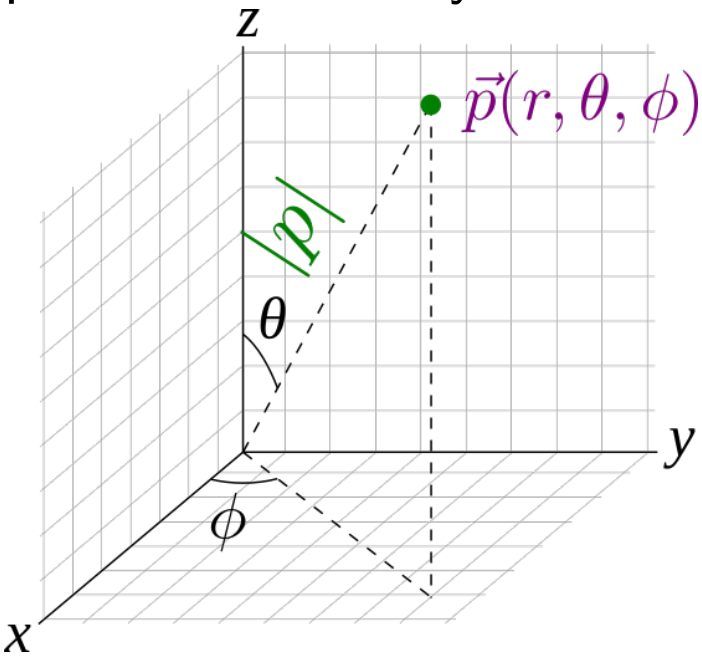


Image: Wikipedia

Spherical

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



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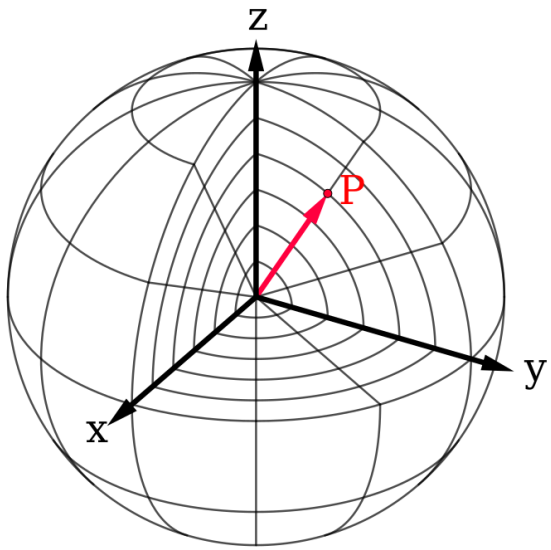

Image: Wikipedia

Others ?

Do you know of any other systems that are used?