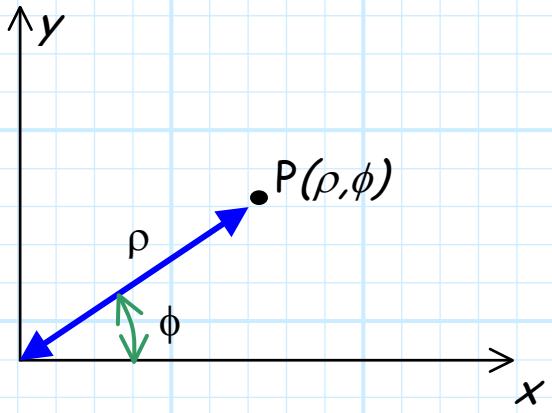
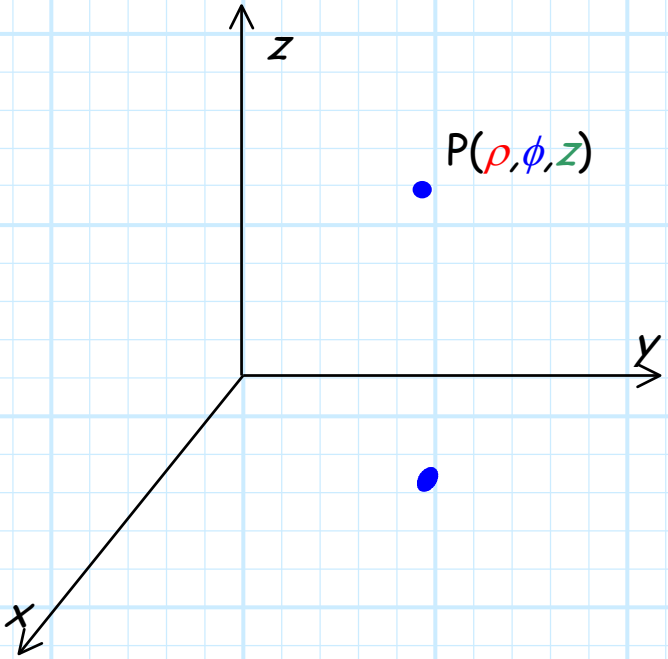
Cylindrical Coordinates

You're probably also familiar with **polar coordinates**. In **two**-dimensions, we can also specify a point with **two** scalar values, generally called ρ and ϕ.



We can extend this to **three**-dimensions, by adding a **third** scalar value z. This method for identifying the position of a point is referred to as **cylindrical coordinates**.



Note the **physical** significance of each parameter of **cylindrical** coordinates:

1. The value ρ indicates the **distance** of the point from the ***z*-axis** $(0 \le \rho < \infty)$.

2. The value ϕ indicates the **rotation angle** around the ***z*-axis** $(0 \le \phi < 2\pi)$, **precisely** the same as the angle ϕ used in **spherical** coordinates.

3. The value z indicates the **distance** of the point from the x-y (z = 0) plane $(-\infty < z < \infty)$, **precisely** the same as the coordinate z used in **Cartesian** coordinates

Once **all three** values are specified, the **position** of a point is **uniquely** identified.