Office: BA5122

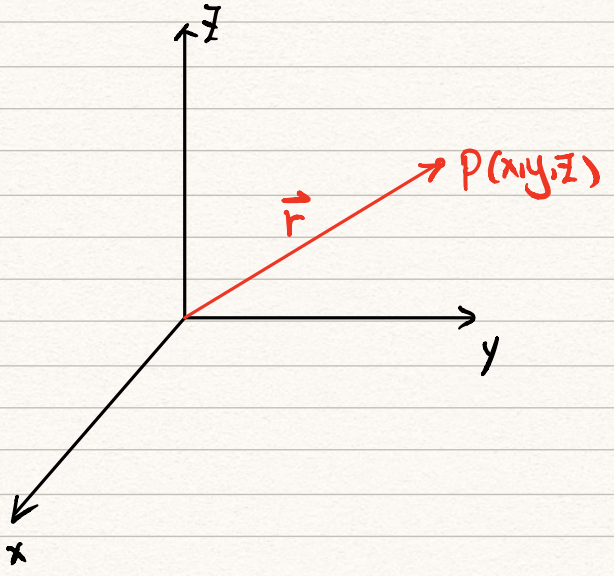
## What is a field?

→ A quantity that depends on space (and also time)

$$\nabla \cdot \vec{D}(\vec{r}, t) = \rho_v(\vec{r}, t)$$

($\vec{r}$: position; $t$: time)

$\vec{D}$: vector field. $\rho_v$: scalar field.




r = "position vector"

(a vector that points from the origin to a point in space)

Cartesian Coordinate: $\vec{F} = x\hat{x} + y\hat{y} + z\hat{z}$

## Derivative of Fields.

How do I take the derivative of a quantity that depends on > 1 spatial variable?