VECTORS AND SCALARS

Vectors

Definition

Vectors are quantities defined by magnitude and direction. The geometrical representation of a vector is by means of an arrow whose length, to some scale, represents the magnitude of the physical quantity and whose direction indicates the direction of the vector.

Scalar

Definition

A scalar quantity is one which is completely defined by its magnitude.

Fundamentals

Vectors are represented as such:

$$\overrightarrow{r} = \begin{pmatrix} x \\ y \\ z \end{pmatrix}$$

or

$$\overrightarrow{r}(x; y; z)$$

When a vector is used to denote a time dependent position we write:

$$\overrightarrow{r} = \begin{pmatrix} x(t) \\ y(t) \\ z(t) \end{pmatrix}$$

Properties

A vector is defined by having a direction, length,