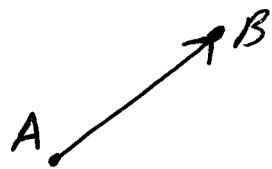


Vogler

Defn A vector is a symbol representing a direction and magnitude (i.e. length or size)

Note: Two vectors are equal if they have same direction and magnitude.

Notation: Vector \vec{AB} is a vector with initial point A & terminal point B.



Defn Let \vec{AB} be a vector. Then the magnitude of \vec{AB} , denoted $|\vec{AB}|$, is

$$2D) \quad \vec{AB} = \overrightarrow{(a,b)} \Rightarrow |\vec{AB}| = \sqrt{a^2+b^2}$$

$$3D) \quad \vec{AB} = \overrightarrow{(a,b,c)} \Rightarrow |\vec{AB}| = \sqrt{a^2+b^2+c^2}$$

Algebra of Vectors Let k be constant

$$2D) \quad \text{Let } \vec{w} = \overrightarrow{(a,b)} \text{ & } \vec{v} = \overrightarrow{(c,d)}$$

$$\text{a) } \vec{w} + \vec{v} = \overrightarrow{(a+c, b+d)}$$

$$\text{b) } k\vec{w} = \overrightarrow{(ka, kb)}$$

$$3D) \quad \text{Let } \vec{w} = \overrightarrow{(a,b,c)} \text{ & } \vec{v} = \overrightarrow{(d,e,f)}$$

$$\text{a) } \vec{w} + \vec{v} = \overrightarrow{(a+d, b+e, c+f)} \quad \text{b) } k\vec{w} = \overrightarrow{(ka, kb, kc)}$$

Defn If \vec{u} is a vector with $|\vec{u}|=1$, we call it a unit vector.

Fact: Let \vec{v} be any vector. Then $\vec{u} = \frac{1}{|\vec{v}|} \vec{v}$ is a unit vector in the same direction as \vec{v} . We say \vec{u} is the direction of \vec{v} .