

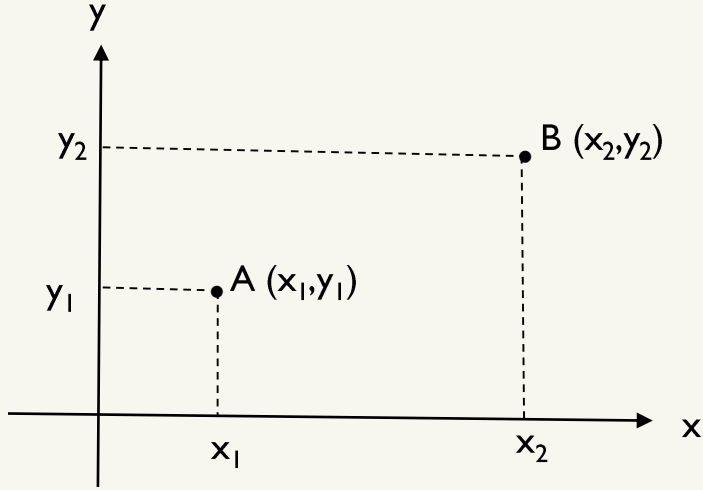
dersdeo

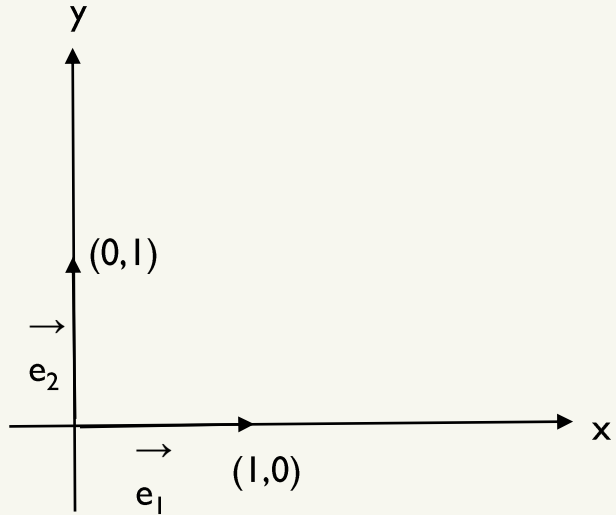
öğrenmenin en kolay yolu ol!

GEOMETRİ

VEKTÖRLER

Koordinat Düzleminde Vektör





$$\rightarrow \\ e_1 = (1,0)$$

$$\rightarrow \\ e_2 = (0,1)$$

$$\rightarrow \\ A = (x_1, y_1)$$

Vektörlerde Toplama İşlemi

$\vec{A} = (x_1, y_1)$ ve $\vec{B} = (x_2, y_2)$ olsun.

$$\vec{A} + \vec{B} =$$

$$\vec{A} - \vec{B} =$$

$$(k \in \mathbb{R}) \quad k \cdot \vec{A}$$

Toplama İşleminin Özellikleri

$$\begin{array}{ccc} \rightarrow & \rightarrow & \rightarrow \\ 1) & A + B = C \end{array}$$

$$\begin{array}{cccc} \rightarrow & \rightarrow & \rightarrow & \rightarrow \\ 2) & A + B = B + A \end{array}$$

$$\begin{array}{cccccc} \rightarrow & \rightarrow & \rightarrow & \rightarrow & \rightarrow & \rightarrow \\ 3) & A + (B + C) = (A + B) + C \end{array}$$

$$\begin{array}{c} \rightarrow \\ 4) \quad 0 \end{array}$$

Toplama İşleminin Özellikleri

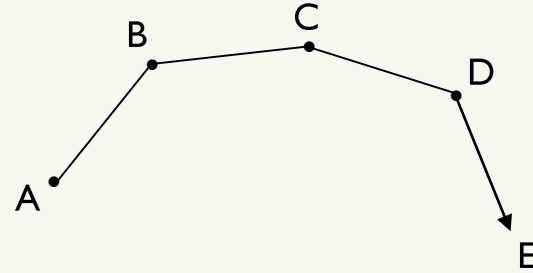
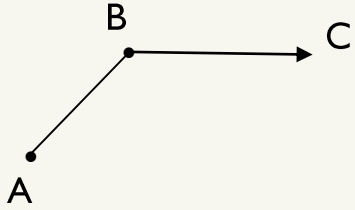
$$\begin{array}{c} \rightarrow \quad \rightarrow \\ 5) \text{ BC} = - \text{CB} \end{array}$$

$$\begin{array}{c} \rightarrow \quad \rightarrow \quad \rightarrow \quad \rightarrow \\ 6) \text{ AB} - \text{CB} = \text{AB} + \text{BC} \end{array}$$

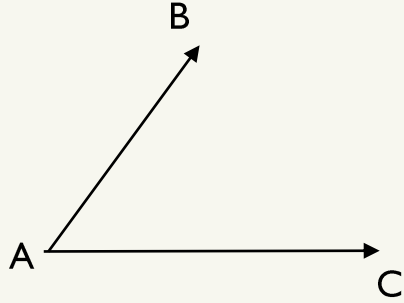
$$\begin{array}{c} \rightarrow \quad \rightarrow \quad \rightarrow \quad \rightarrow \quad \rightarrow \\ 7) \text{ AB} + \text{BC} + \text{CD} + \text{DE} = \text{AE} \end{array}$$

Vektörlerde Toplama İşlemi

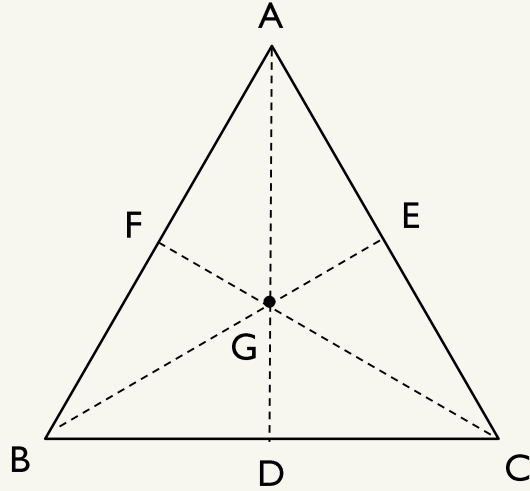
Uç Uca Ekleme Metodu:



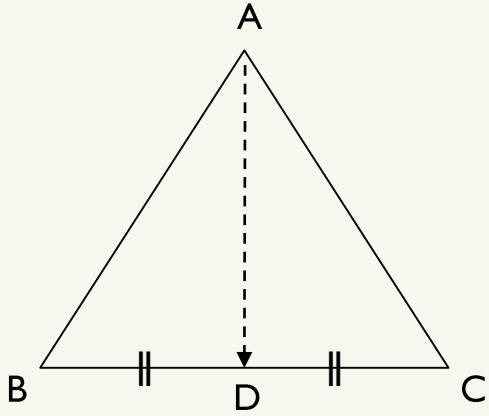
Paralelkenar Metodu



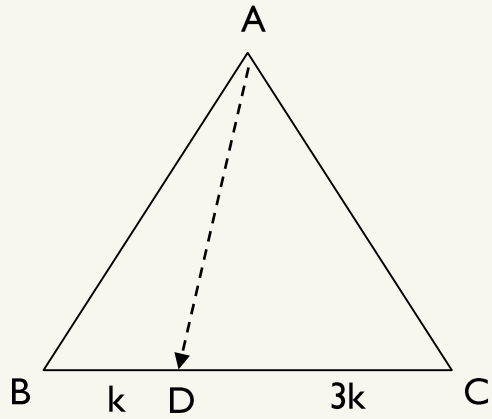
NOT:



G; ağırlık merkezi

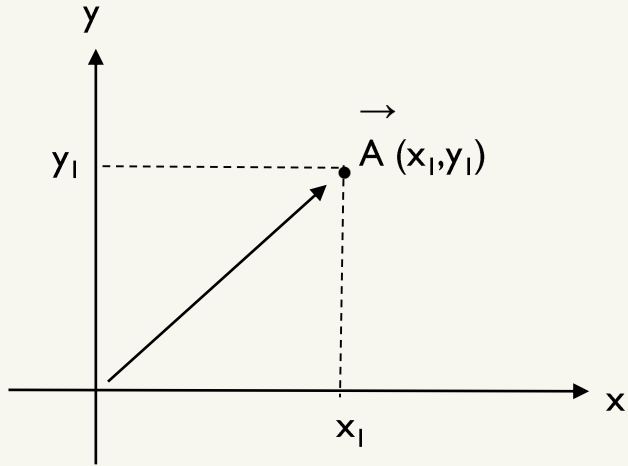


$\rightarrow$
 $AD =$



$\rightarrow$
 $AD =$

Vektörlerde Uzunluk (Norm)



Birim Vektör :

ÖRNEK: Hangisi birim vektör değildir?

A) $(1,0)$

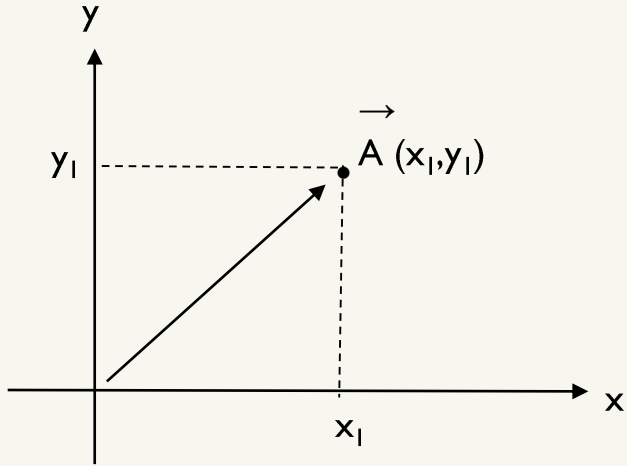
B) $(0,-1)$

C) $(\sin\alpha, \cos\alpha)$

D) $(-\frac{3}{5}, \frac{4}{5})$

E) $(1,1)$

Bir Vektör Yönündeki Birim Vektör



Lineer Bileşim

$$\vec{A} = (x_1, y_1) \text{ ve } \vec{B} = (x_2, y_2)$$

Lineer Bağımlılık

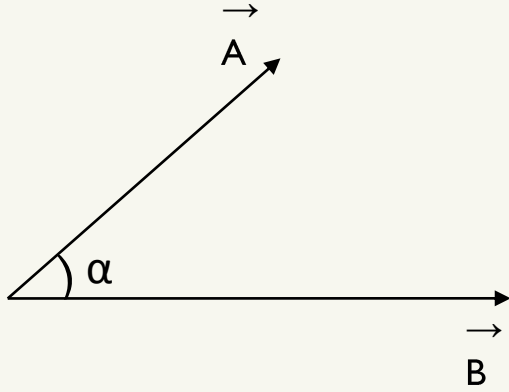
$$\vec{A} = (x_1, y_1) \text{ ve } \vec{B} = (x_2, y_2)$$

Vektörlerin İç (Skaler) Çarpımı

$$\vec{A} = (x_1, y_1) \quad \vec{B} = (x_2, y_2)$$

$$\vec{A} \cdot \vec{B}$$

İki Vektör Arasındaki Aç



Paralellik ve Diklik

→

$$A = (x_1, y_1)$$

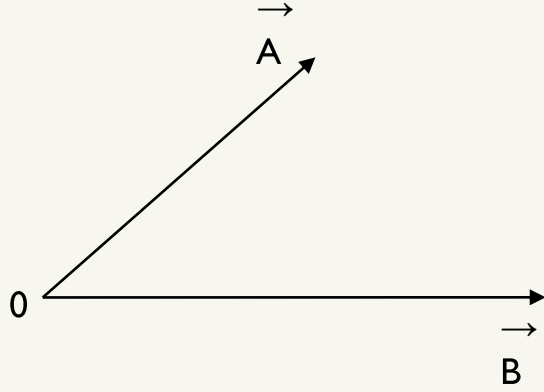
→

$$B = (x_2, y_2)$$

Paralellik

Diklik

Dik İzdüşüm Vektörü ve Uzunluğu



ÖRNEK: $\vec{A} = (2,1)$ vektörünün $(-3,4)$ vektörü üzerindeki dik izdüşüm vektörünü bulunuz.

NOT: $ax + by + c = 0$ doğrusunun,

doğrultman vektörü $\rightarrow$

normal vektörü $\rightarrow$

ÖRNEK: $\vec{A} = (3,1)$ vektörünün $x + y - 5 = 0$ doğrusu üzerindeki dik izdüşüm uzunluğu kaç birimdir?

ÖZELLİKLER:

$$\begin{array}{ccccccc} & \rightarrow^2 & & \rightarrow & \rightarrow & \rightarrow & \rightarrow \\ 1) & A = A \cdot A = |A| \cdot |A| = |A|^2 \end{array}$$

$$\begin{array}{ccccccc} & \rightarrow & \rightarrow & & \rightarrow & \rightarrow & \rightarrow \\ 2) & \langle A, B \rangle = A \cdot B = B \cdot A \end{array}$$

$$\begin{array}{ccccccc} & \rightarrow & \rightarrow & \rightarrow & & \rightarrow & \rightarrow \\ 3) & A \cdot (B \cdot C) \neq (A \cdot B) \cdot C \end{array}$$

ÖZELLİKLER:

$$\begin{array}{ccccccc} \rightarrow & \rightarrow & \rightarrow & \rightarrow & \rightarrow & \rightarrow & \rightarrow \\ 4) \vec{A} \cdot (\vec{B} + \vec{C}) & = & \vec{A} \cdot \vec{B} & + & \vec{A} \cdot \vec{C} \end{array}$$

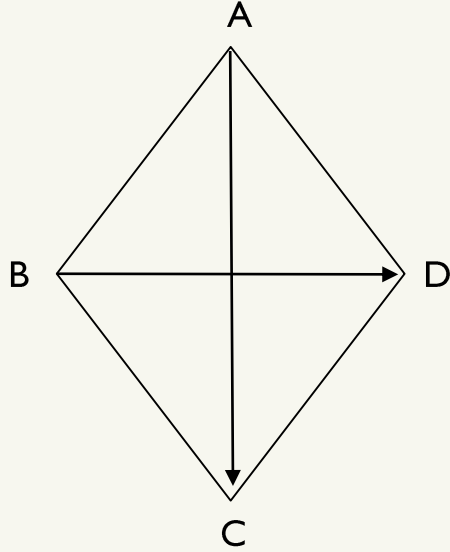
$$\begin{array}{ccccccc} \rightarrow & \rightarrow & \rightarrow & \rightarrow & \rightarrow & \rightarrow & \rightarrow \\ 5) |\vec{A} + \vec{B}|^2 & = & A^2 & + & 2\vec{A} \cdot \vec{B} & + & B^2 \end{array}$$

$$\begin{array}{ccccccc} \rightarrow & \rightarrow & \rightarrow & \rightarrow & \rightarrow & \rightarrow & \rightarrow \\ 6) |\vec{A} - \vec{B}|^2 & = & A^2 & - & 2\vec{A} \cdot \vec{B} & + & B^2 \end{array}$$

Vektörel Denklem

$\rightarrow$
A (x_1, y_1) noktasından geçen ve $V = (a, b)$ doğrultman vektörü verilen doğrunun denklemi,

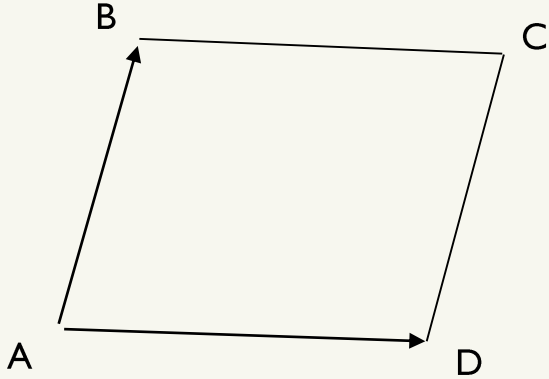
Vektörlerde Alan Bulma



$$\vec{AC} = \vec{p} = (a, b)$$

$$\vec{BD} = \vec{q} = (c, d)$$

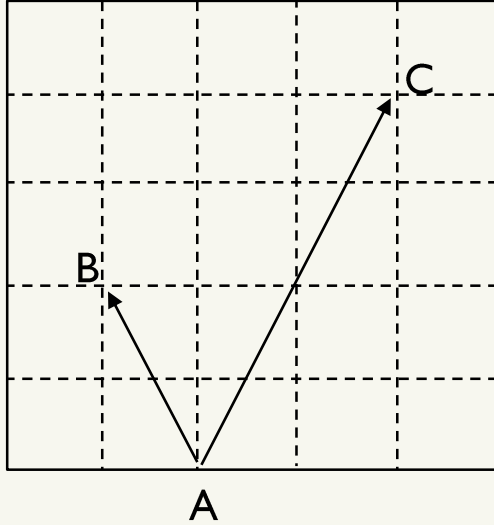
ABCD paralelkenar



$$\vec{AB} = (a, b)$$

$$\vec{AD} = (c, d)$$

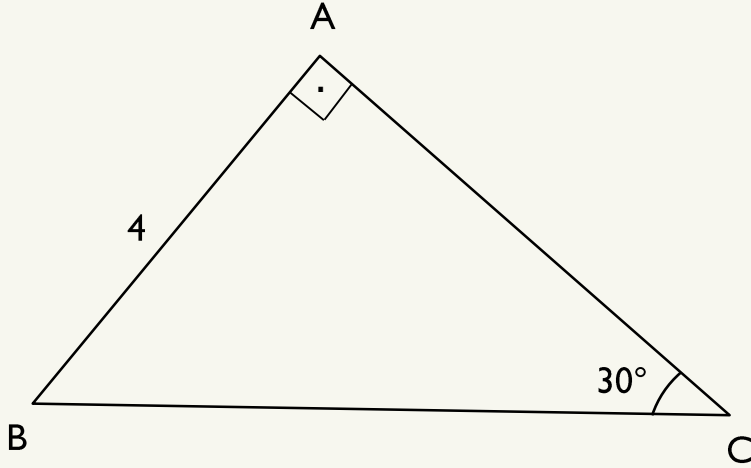
ÖRNEK



Birim karelerden oluşan şekildeki $\vec{AB}$ ve $\vec{AC}$ vektörleri için,

$\vec{AB} \cdot \vec{AC}$ sonucu kaçtır?

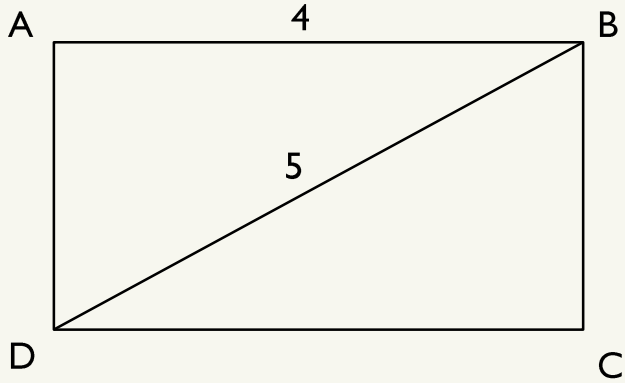
ÖRNEK



Δ
ABC dik üçgeninde
 $m(\hat{ACB}) = 30^\circ$ ve $|AB| = 4$ br ise;

$\vec{BA} \cdot (\vec{BC} + \vec{AC})$ sonucu kaçtır?

ÖRNEK



ABCD dikdörtgeninde

$$|AB| = 4 \text{ br}$$

$$|BD| = 5 \text{ br}$$

$\vec{AB} \cdot (\vec{BD} + \vec{BC})$ sonucu kaçtır?