

BBI WIEN

# Vektoren in $\mathbb{R}^2$ - Grundlagen

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Einige Schwarzdruckkopiervorschläge mit  
großer Schrift und starken Linien

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Inhalt: verschiedene Vektoren, parallele Vektoren, Normalvektoren, Vektoraddition, Vektorsubtraktion, Vektoren in diversen Vierecken, Multiplikation einer Vektors mit einer Zahl, Skalarprodukt

2 Verschiedene Vektoren

3 Parallele Vektoren

4 Normalvektoren

5 Vektoraddition

6 Vektorsubtraktion

7 -9 Quadrat

10 -12 Parallelogramm

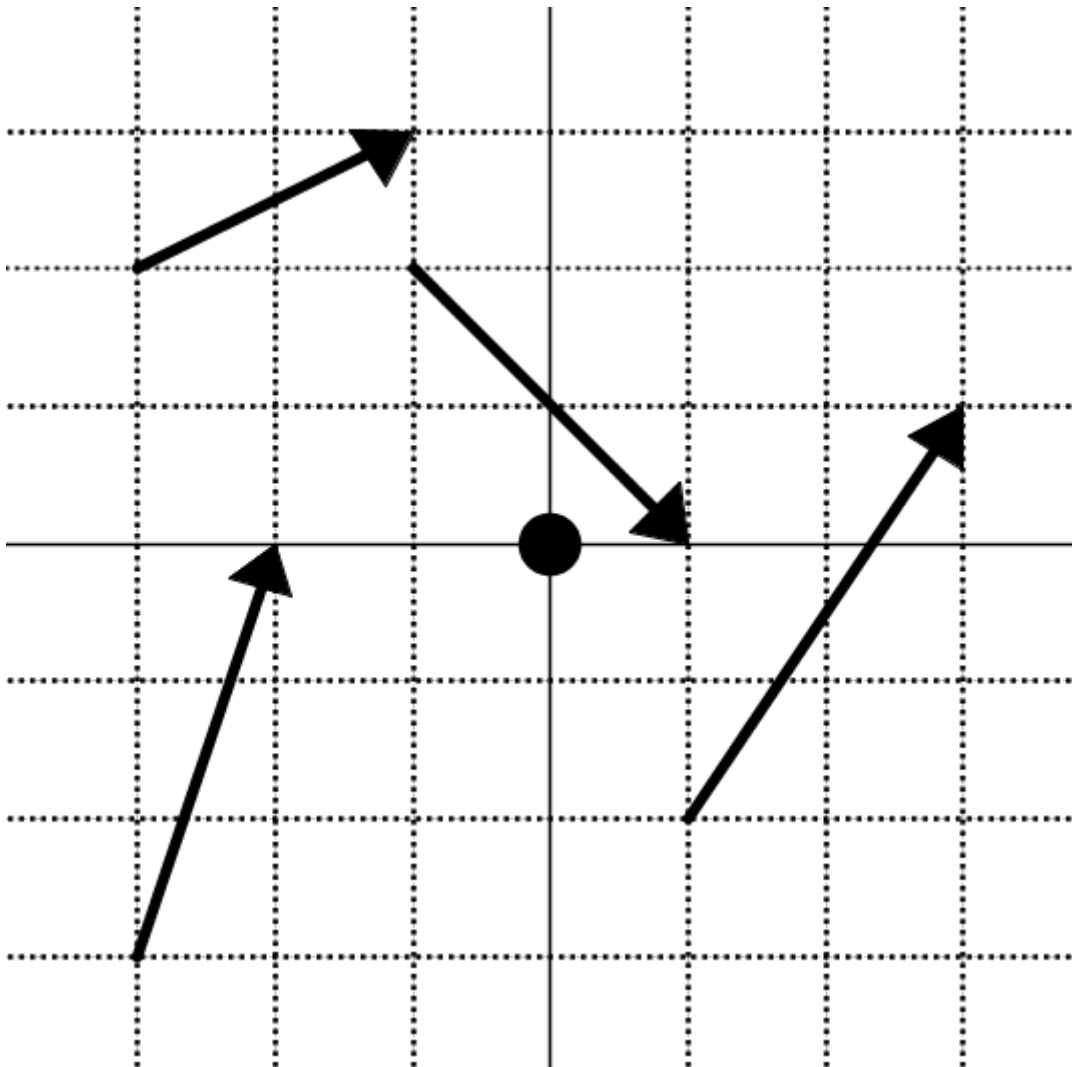
13 Raute (Rhombus)

14 Deltoid

15 Mult. mit Skalar

16 Skalarprodukt

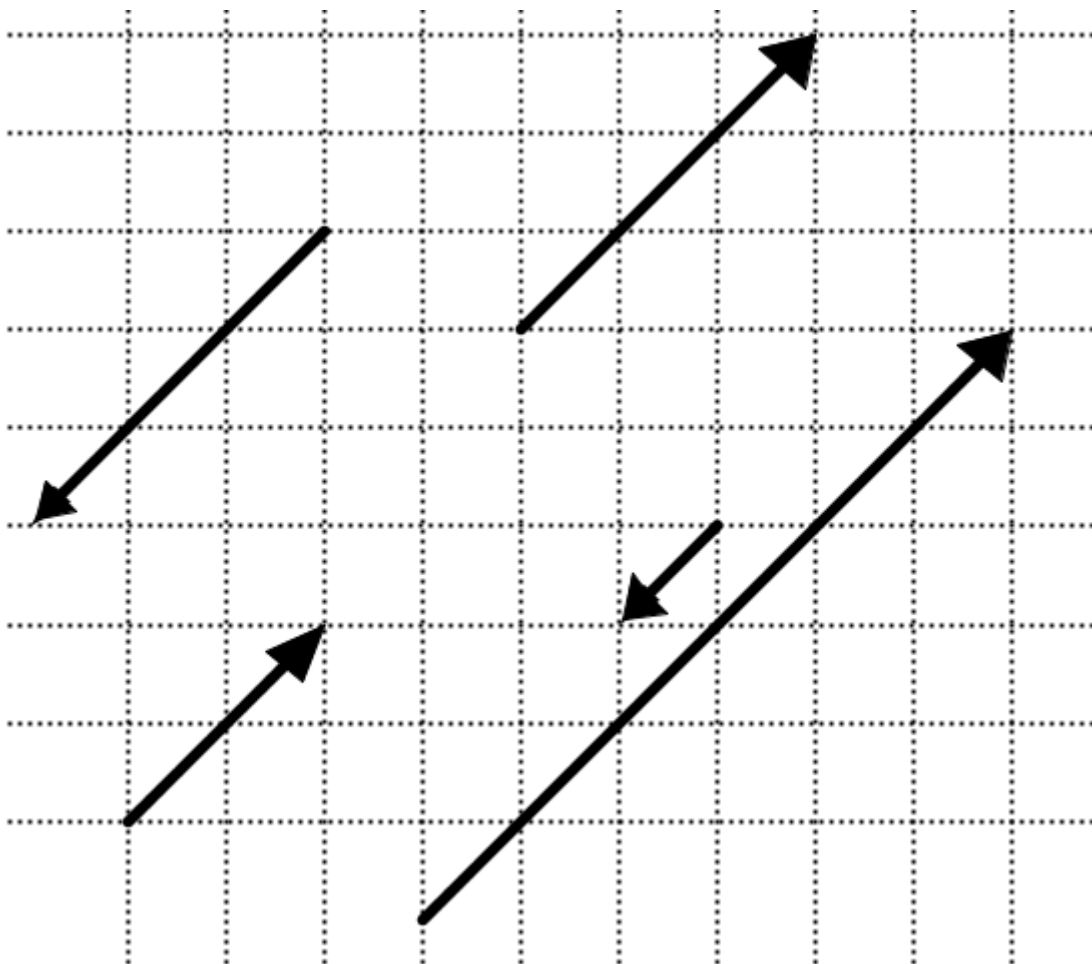
# Verschiedene Vektoren



Parallele Vektoren:  $\longrightarrow$

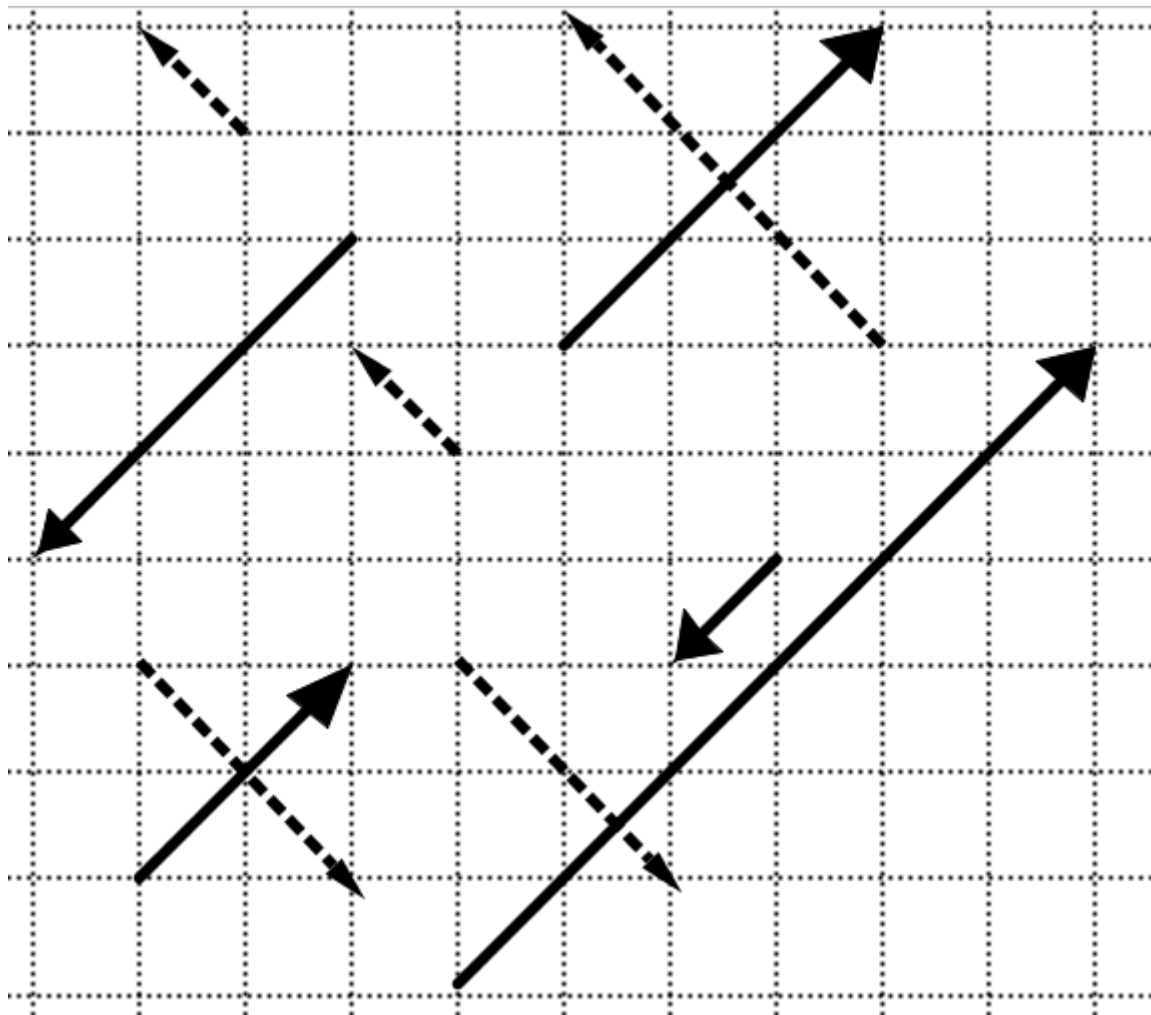
gleich- oder

entgegengesetzt gerichtet



Vektoren:  $\longrightarrow$

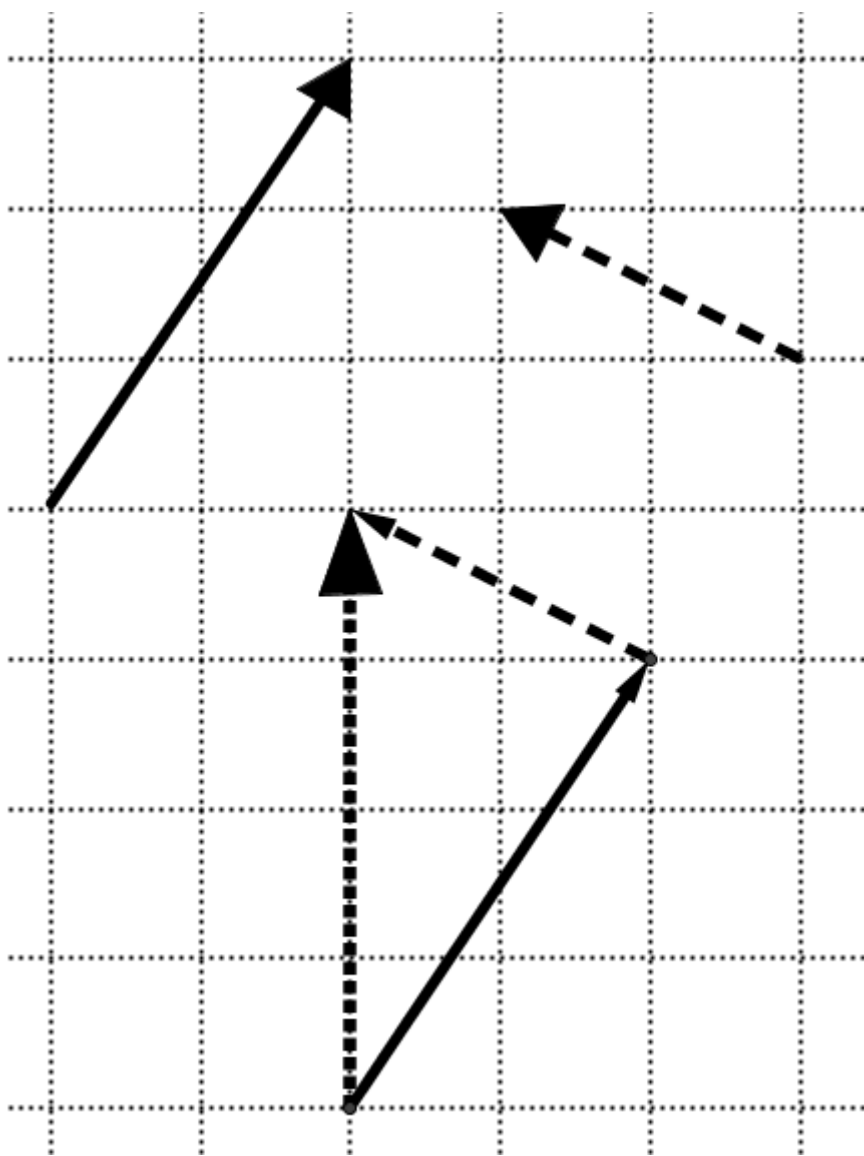
Normalvektoren dazu:  $-\ - \longrightarrow$



# Vektoraddition

'va:  $\longrightarrow$  ||    'vb:  $- - - \blacktriangleright$

'va + 'vb = 'vc:  $\cdots \blacktriangleright$

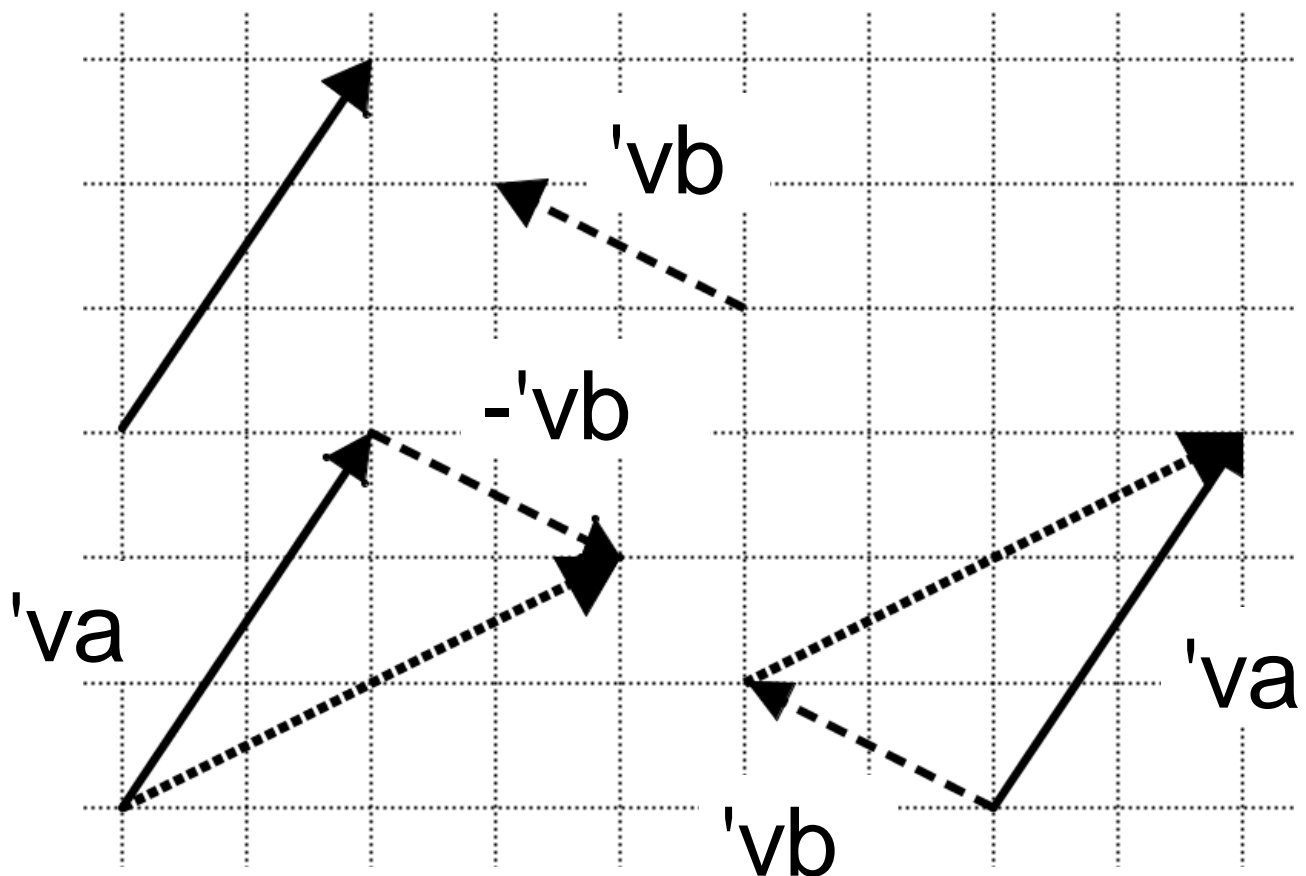


# Vektorsubtraktion

'va:  $\longrightarrow$  || 'vb:  $- - - \blacktriangleright$

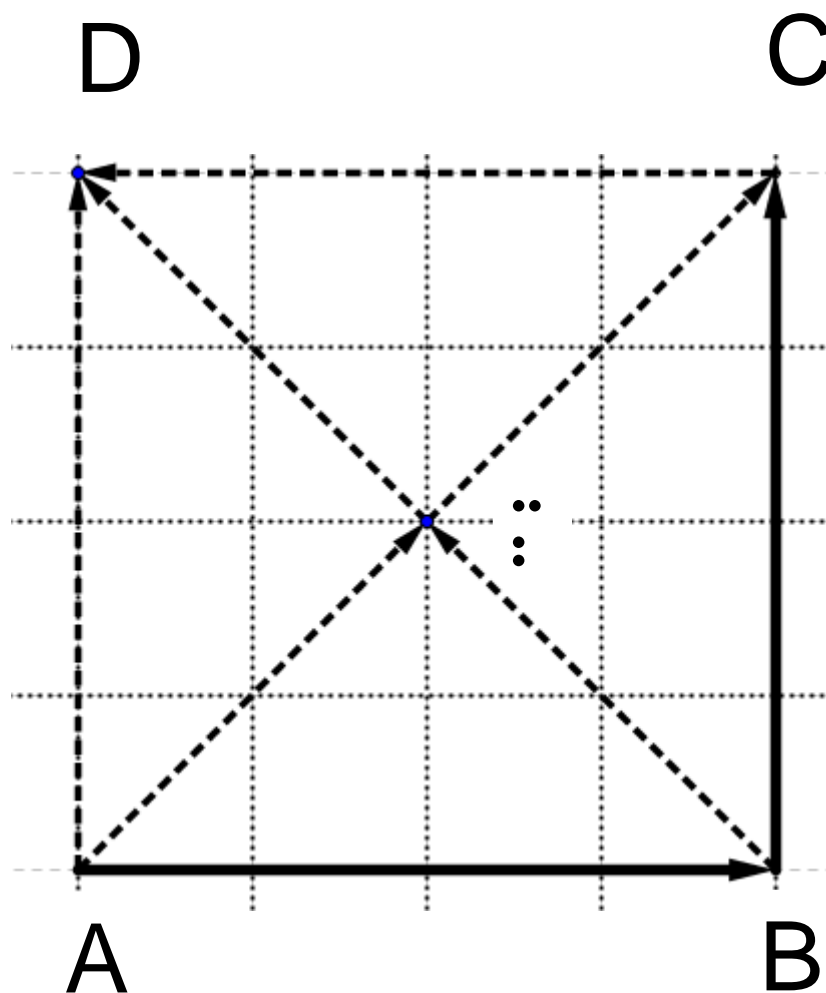
'vc:  $\cdots\cdots\cdots\blacktriangleright$

$$'vc = 'va + (-'vb) = 'va - 'vb$$



Quadrat: Geg. A, B, C

Ges: D, M

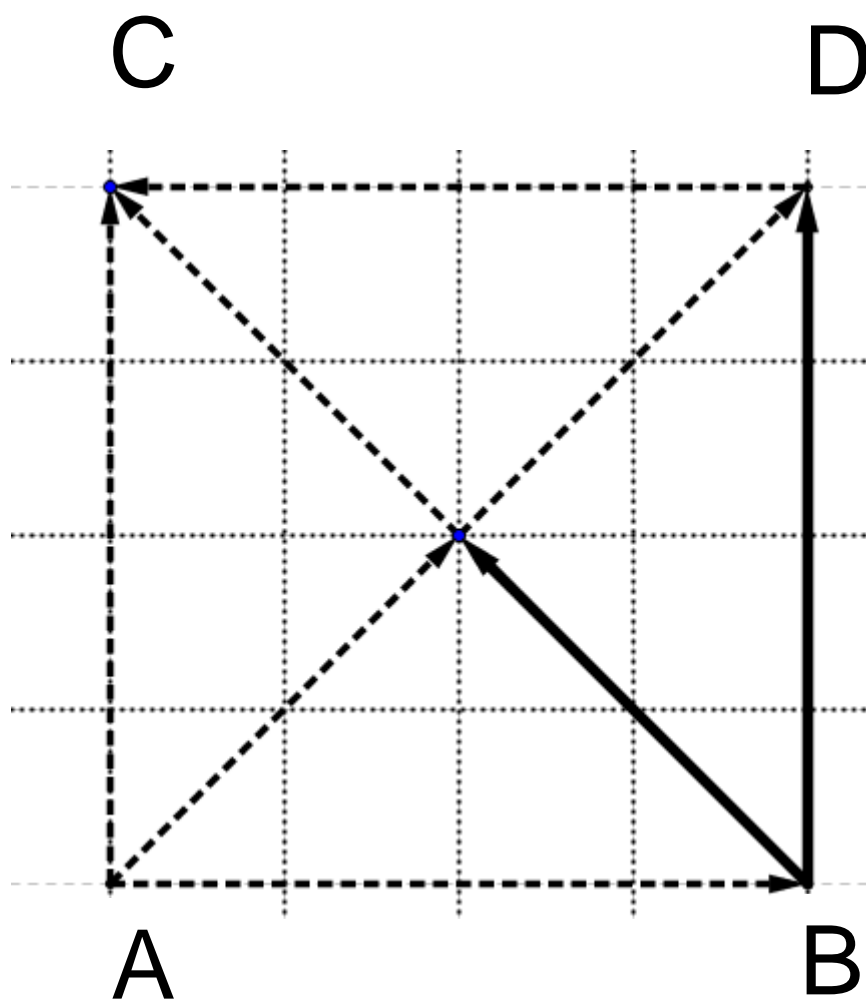




Quadrat:

Geg. B, M,  $\vec{v}_{BC}$ ,

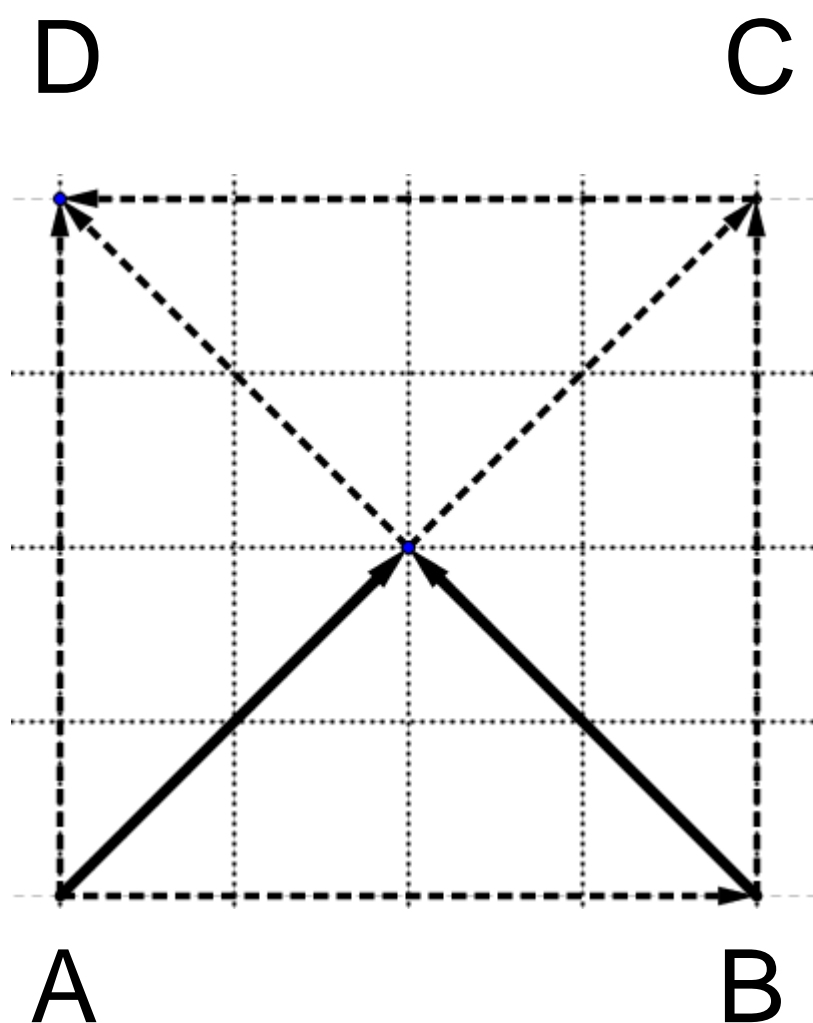
Ges: A, D



Quadrat:

Geg.  $A$ ,  $\vec{v}_{AM}$ ,  $\vec{v}_{BM}$

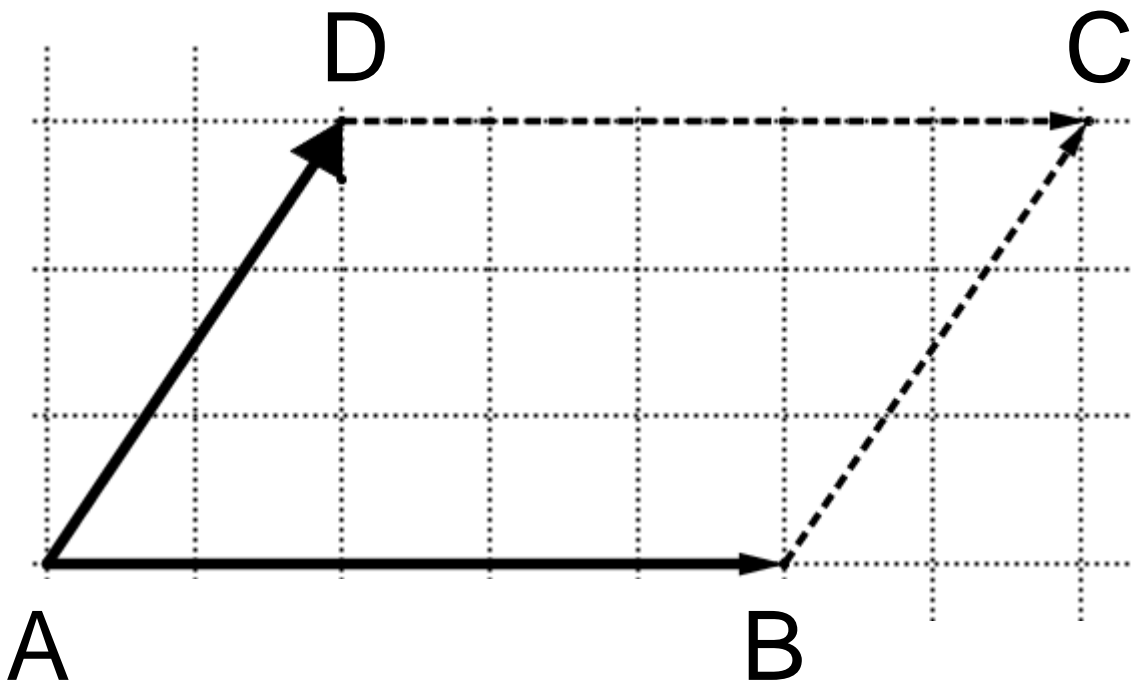
Ges:  $C$ ,  $D$



# Parallelogramm

Geg.  $A$ ,  $\vec{v}_{AB}$ ,  $\vec{v}_{AD}$

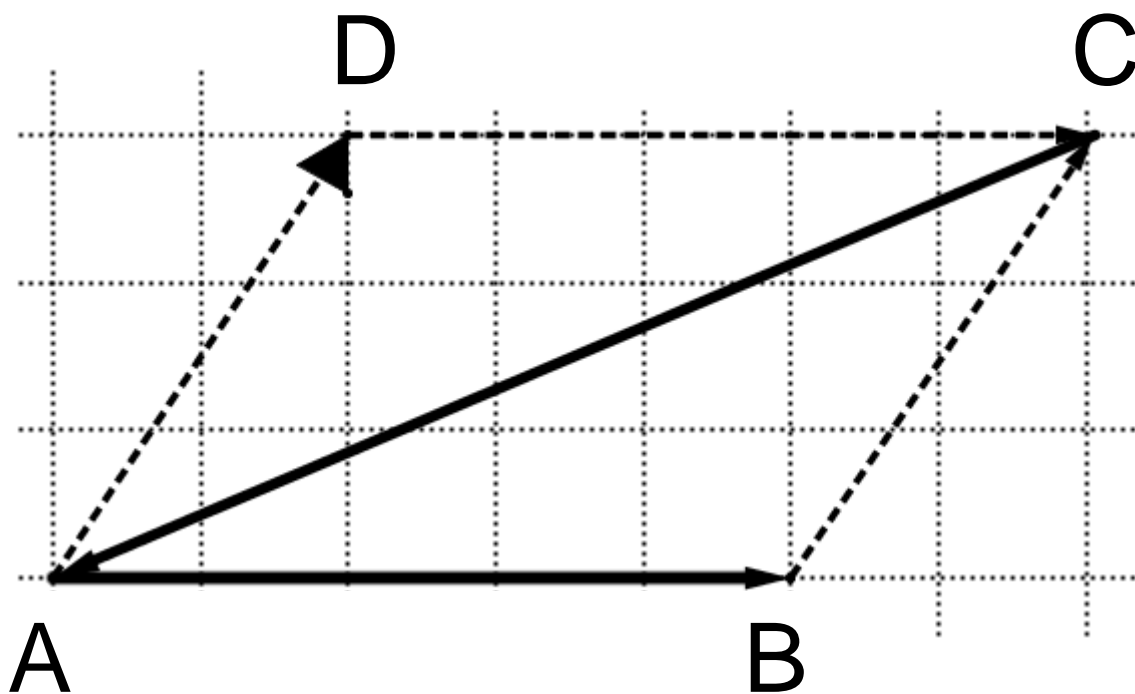
Ges.  $B$ ,  $C$ ,  $D$



# Parallelogramm

Geg.  $A$ ,  $\vec{v}_{AB}$ ,  $\vec{v}_{CA}$

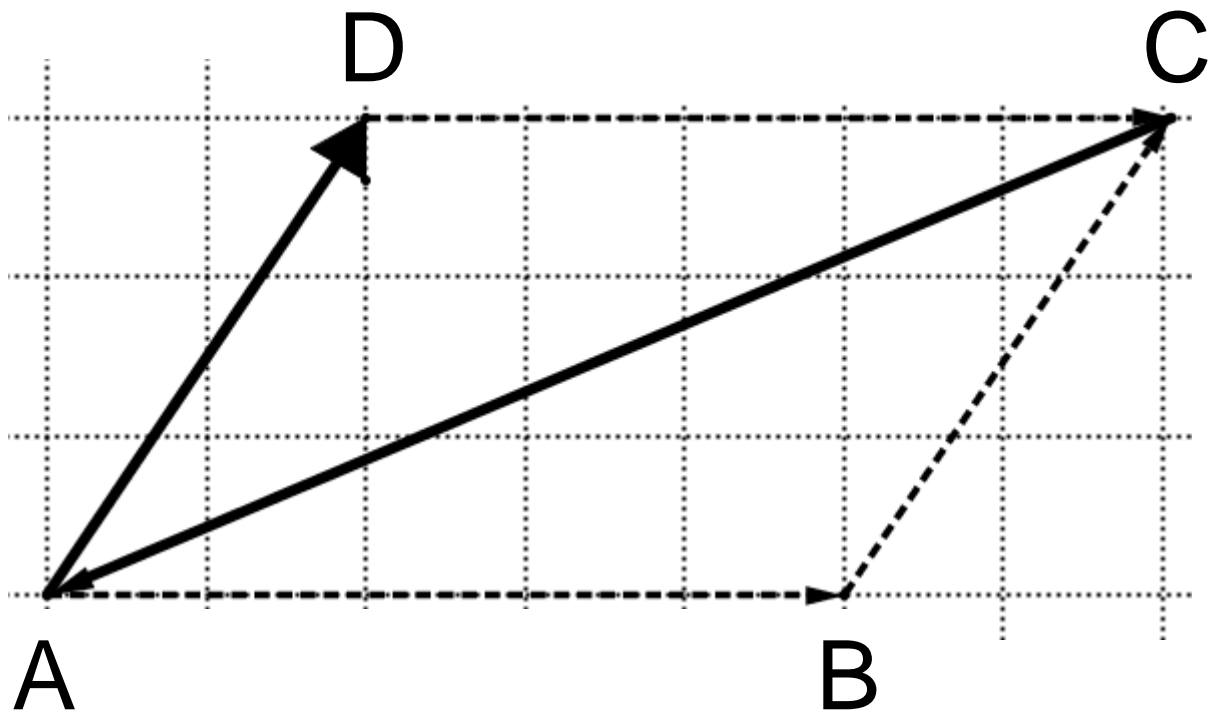
Ges.  $B$ ,  $C$ ,  $D$



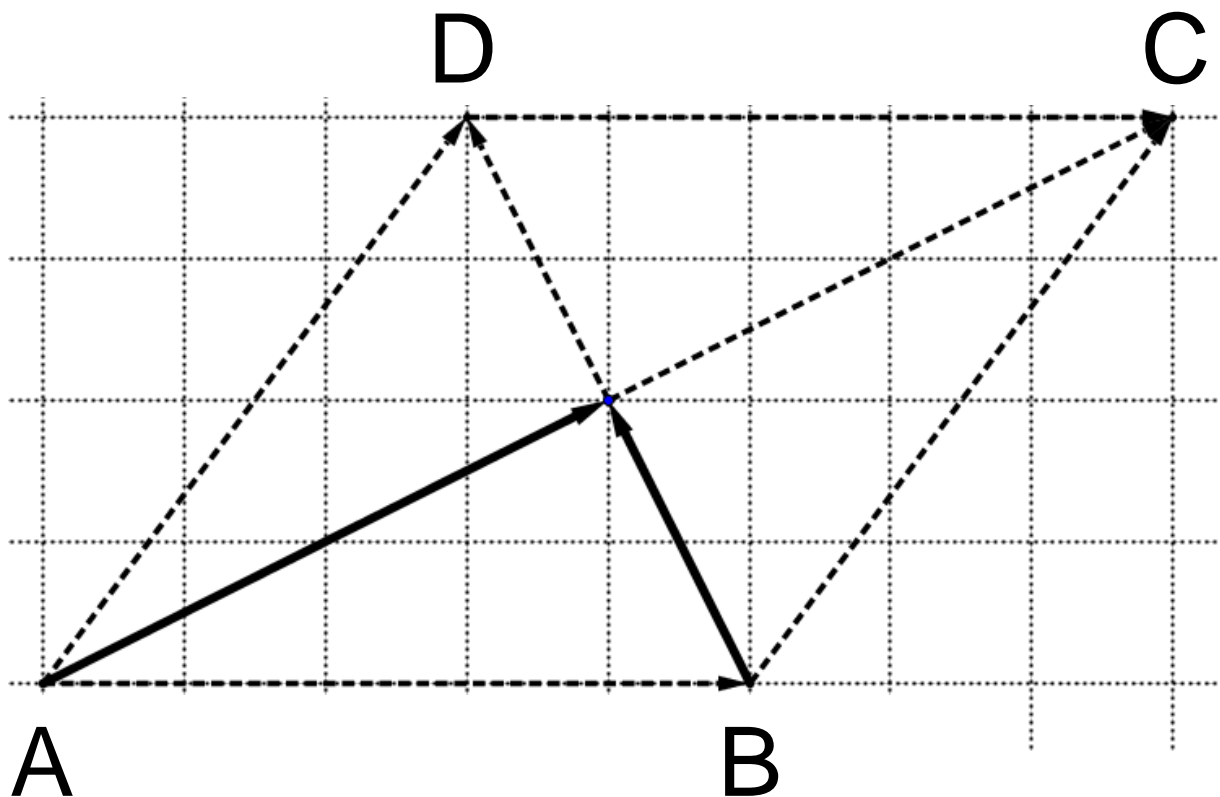
# Parallelogramm

Geg.  $A$ ,  $\vec{v}_{AB}$ ,  $\vec{v}_{CA}$

Ges.  $B$ ,  $C$ ,  $D$



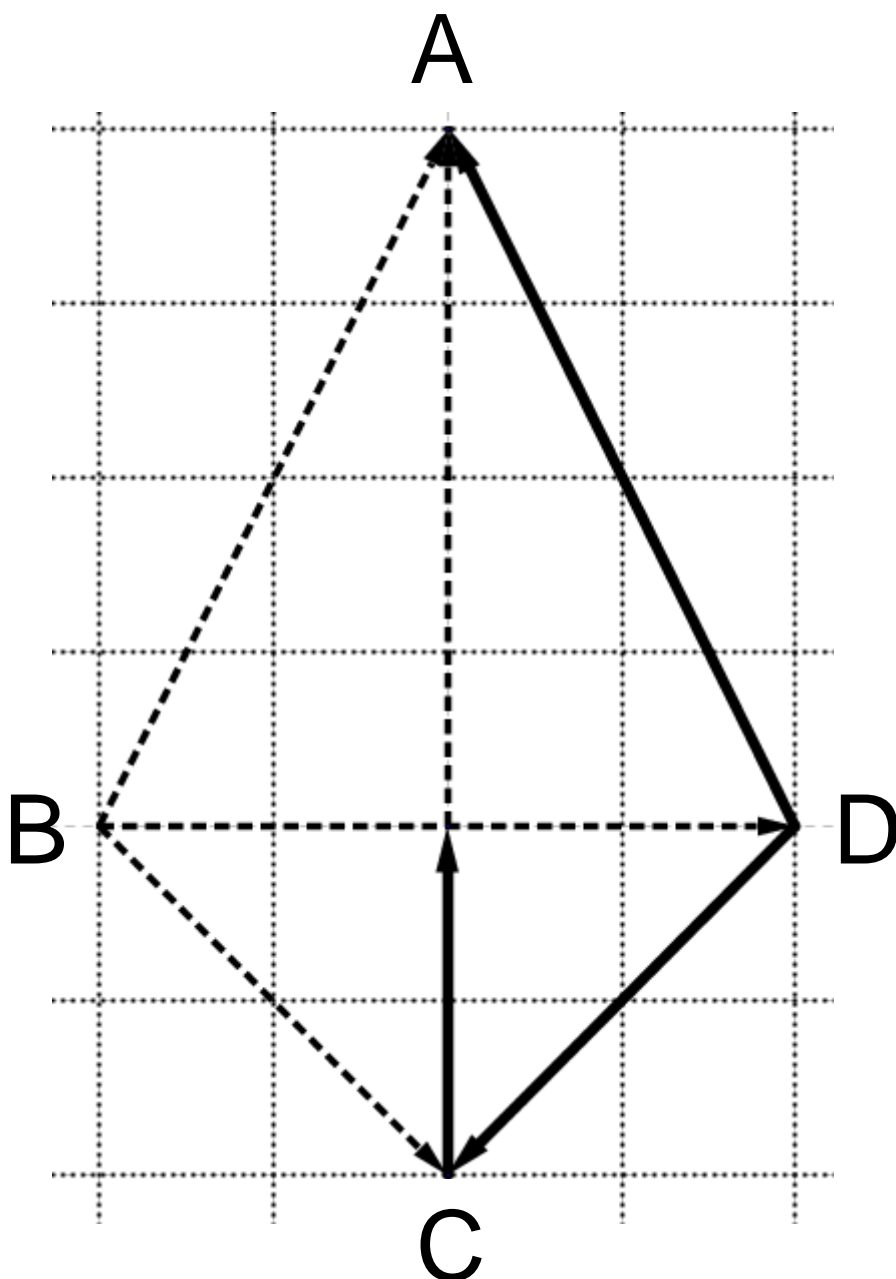
## Rhombus (Raute)

Geg.  $A$ ,  $\vec{v}_{AM}$ ,  $\vec{v}_{BM}$ Ges.  $B$ ,  $C$ ,  $D$ 

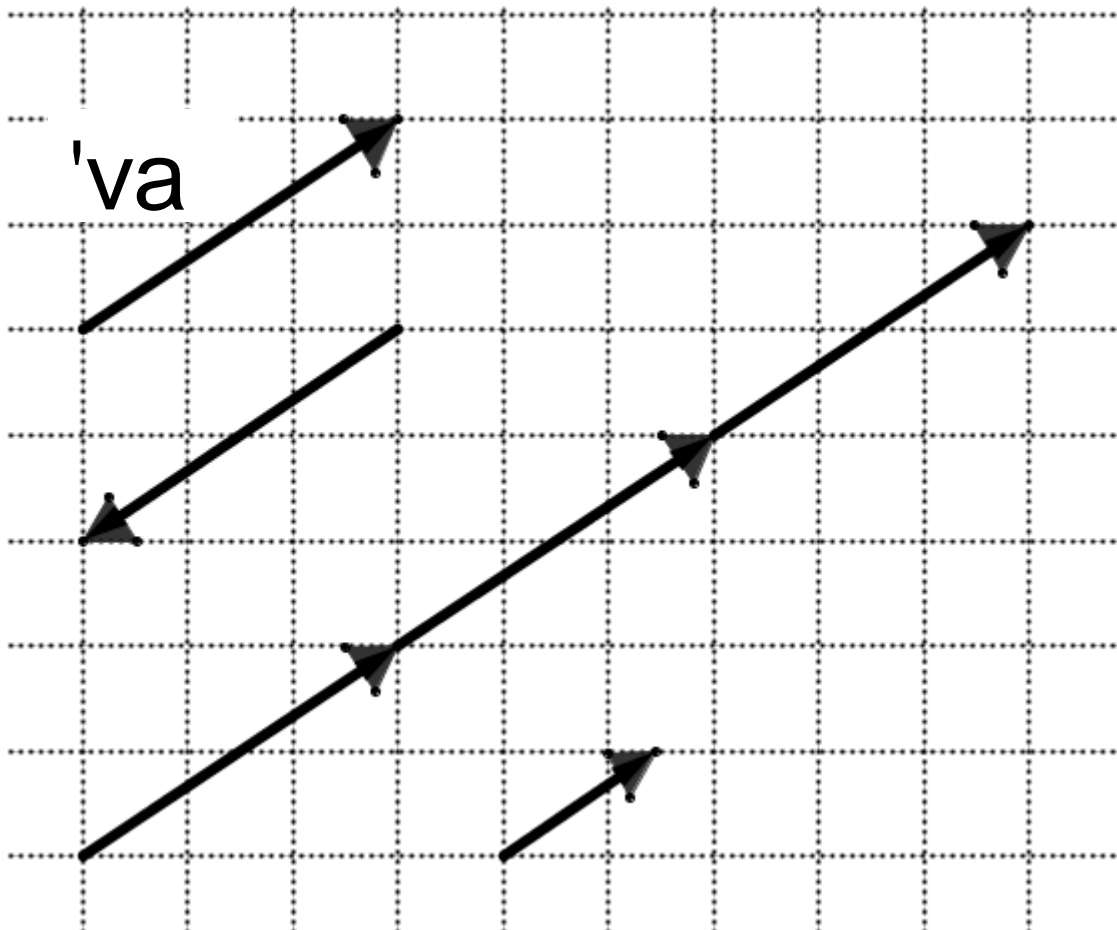
# Deltoid

Geg. A, C, D,  $M_f$

Ges. B



## Mult. mit einem Skalar

 $\vec{v}_a$ ;  $-\vec{v}_a$ ;  $3 \cdot \vec{v}_a$ ;  $\frac{1}{2} \cdot \vec{v}_a$ 



# Skalarprodukt

$\vec{v}_a \cdot \vec{v}_b = \text{Länge des Vektors } \vec{v}_a \text{ mal Länge der Normalprojektion des Vektors } \vec{v}_b \text{ auf } \vec{v}_a$

