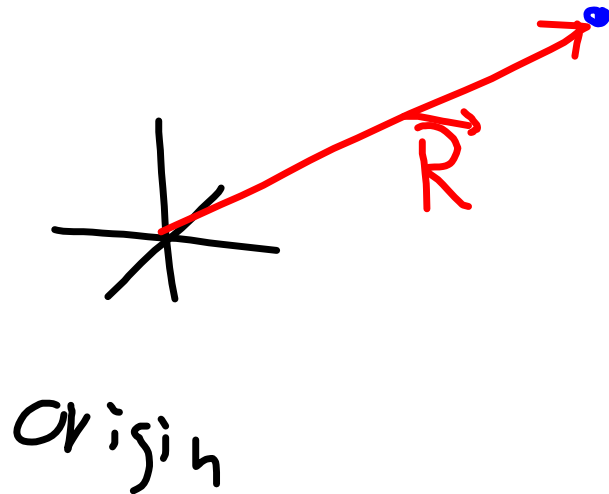


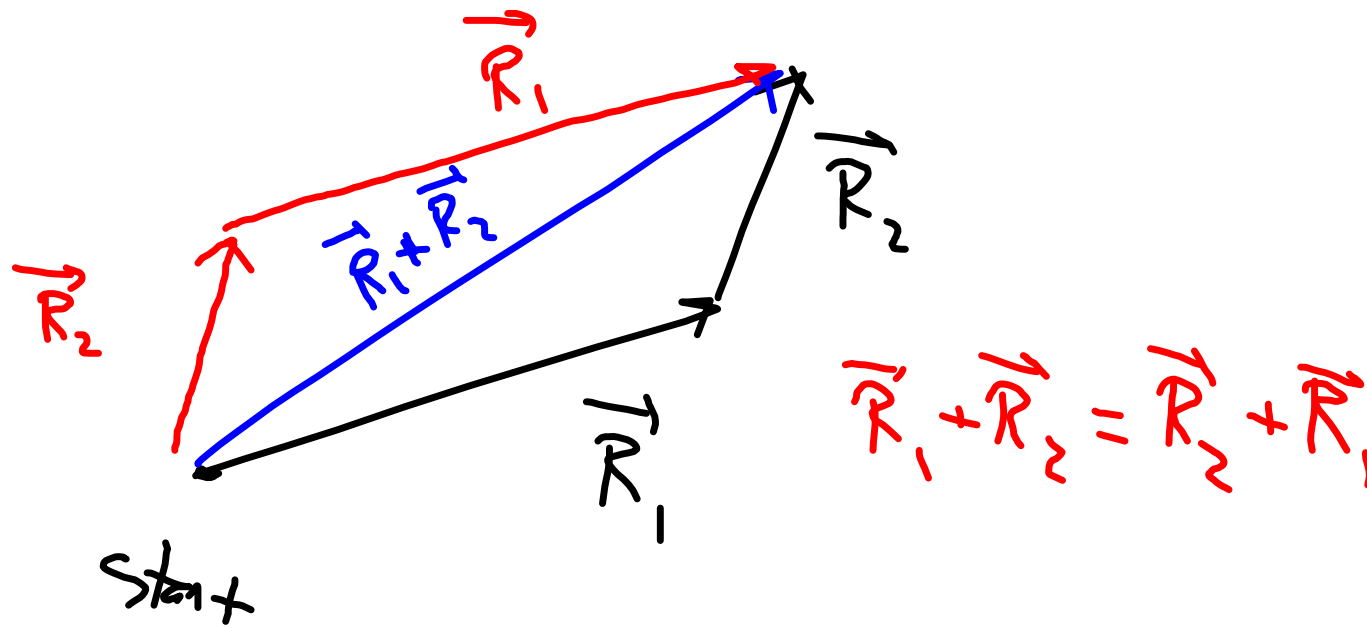
Vectors:

①

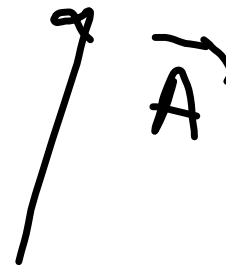
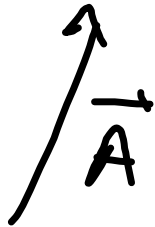
Displacement vector, position vector.



Vector addition: successive displacements.



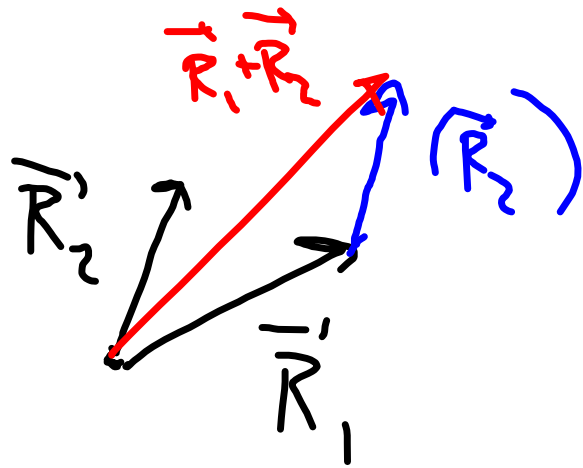
"Free" vectors.

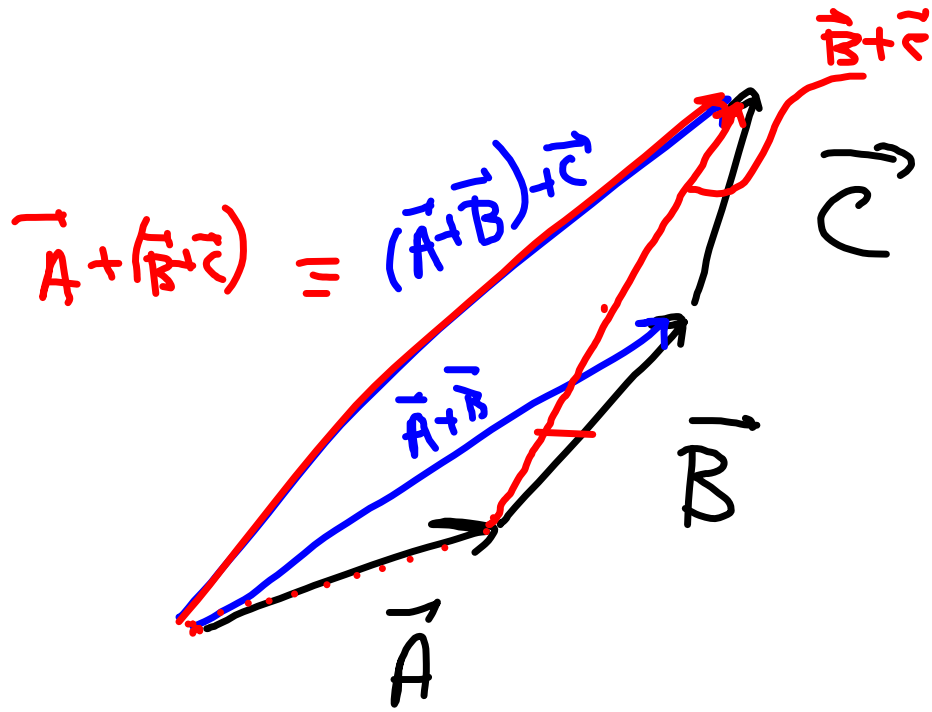


What about "field" vectors?

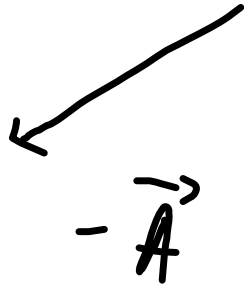
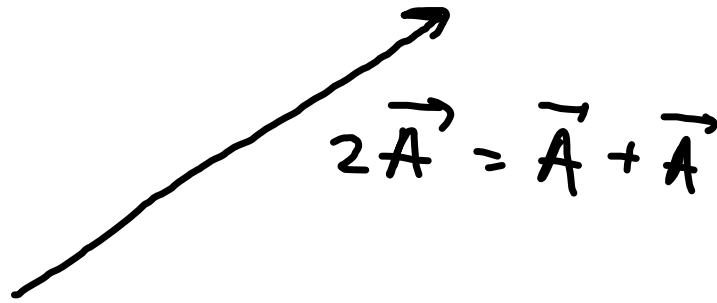
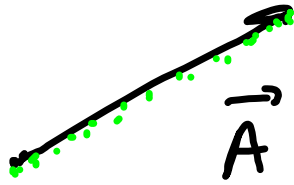


Addition of 2 vectors in
"standard" position.



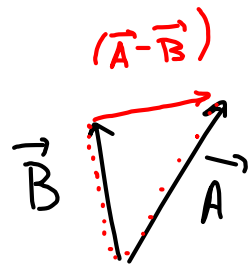


$$\begin{aligned}
 \vec{A} + \vec{B} + \vec{C} &= (\vec{A} + \vec{B}) + \vec{C} \\
 &= \vec{A} + (\vec{B} + \vec{C})
 \end{aligned}$$



$$\vec{A} + (-\vec{A}) = \vec{0}$$

Vector subtraction.



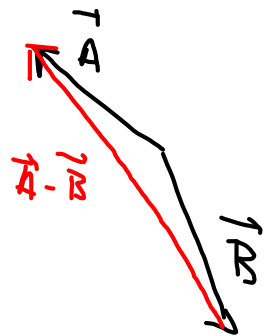
$$\vec{A} - \vec{B}$$

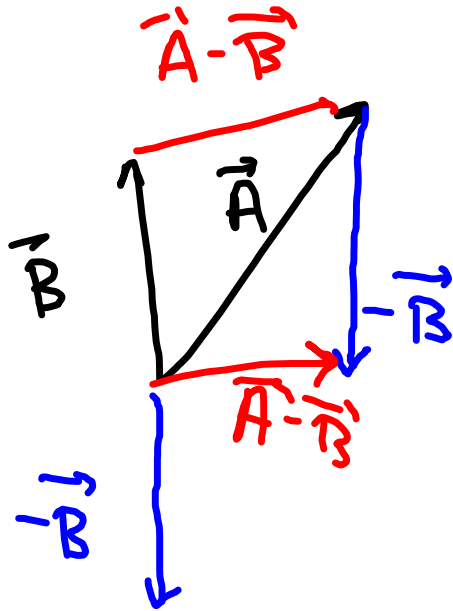
Think:

$$(\vec{A} - \vec{B}) + \vec{B} = \vec{A}$$

$(\vec{A} - \vec{B})$ is what you add to \vec{B} to get \vec{A} .

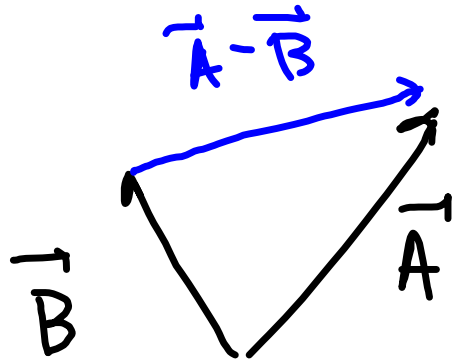
Runs from the tip of \vec{B} to the tip of \vec{A} .



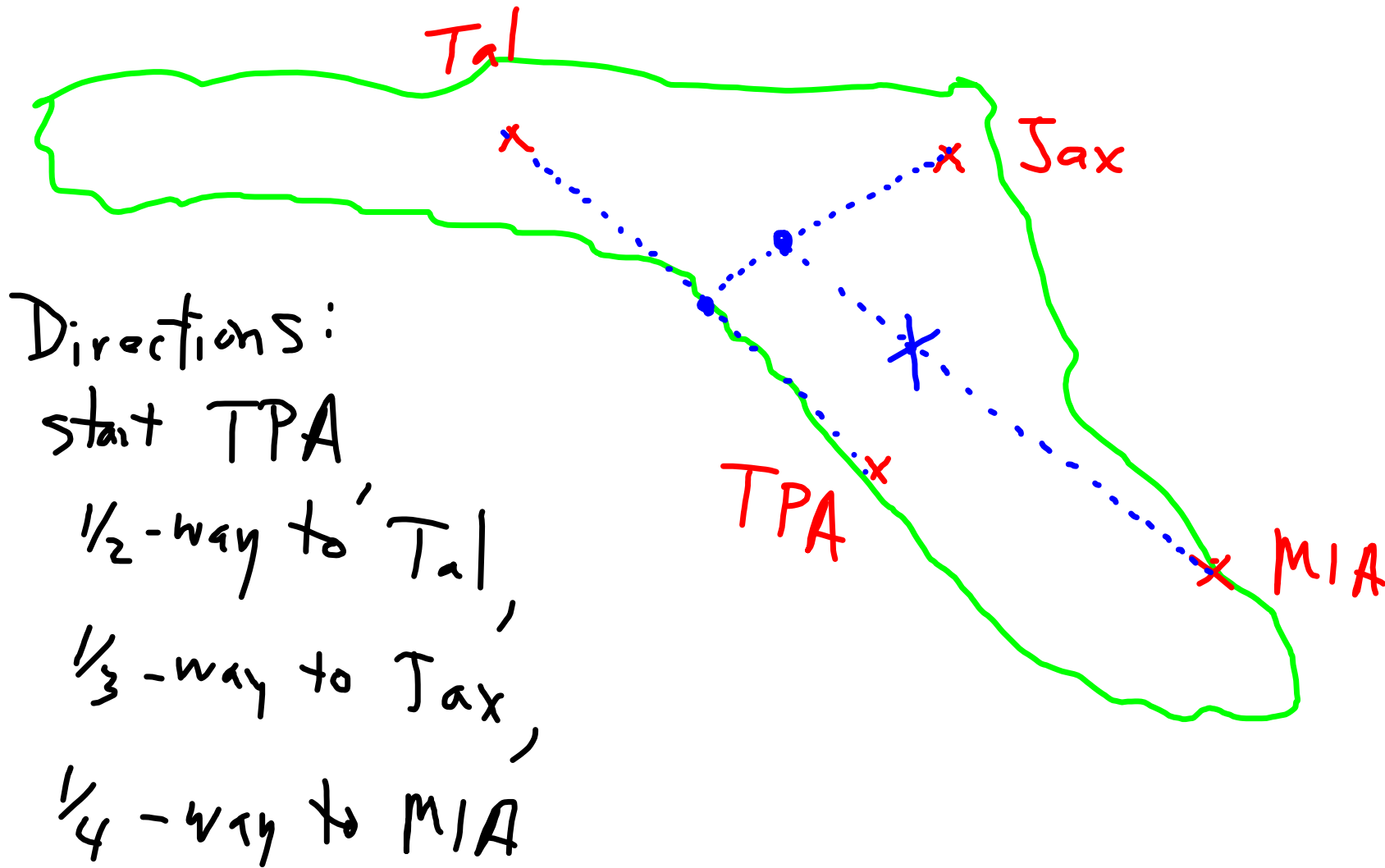


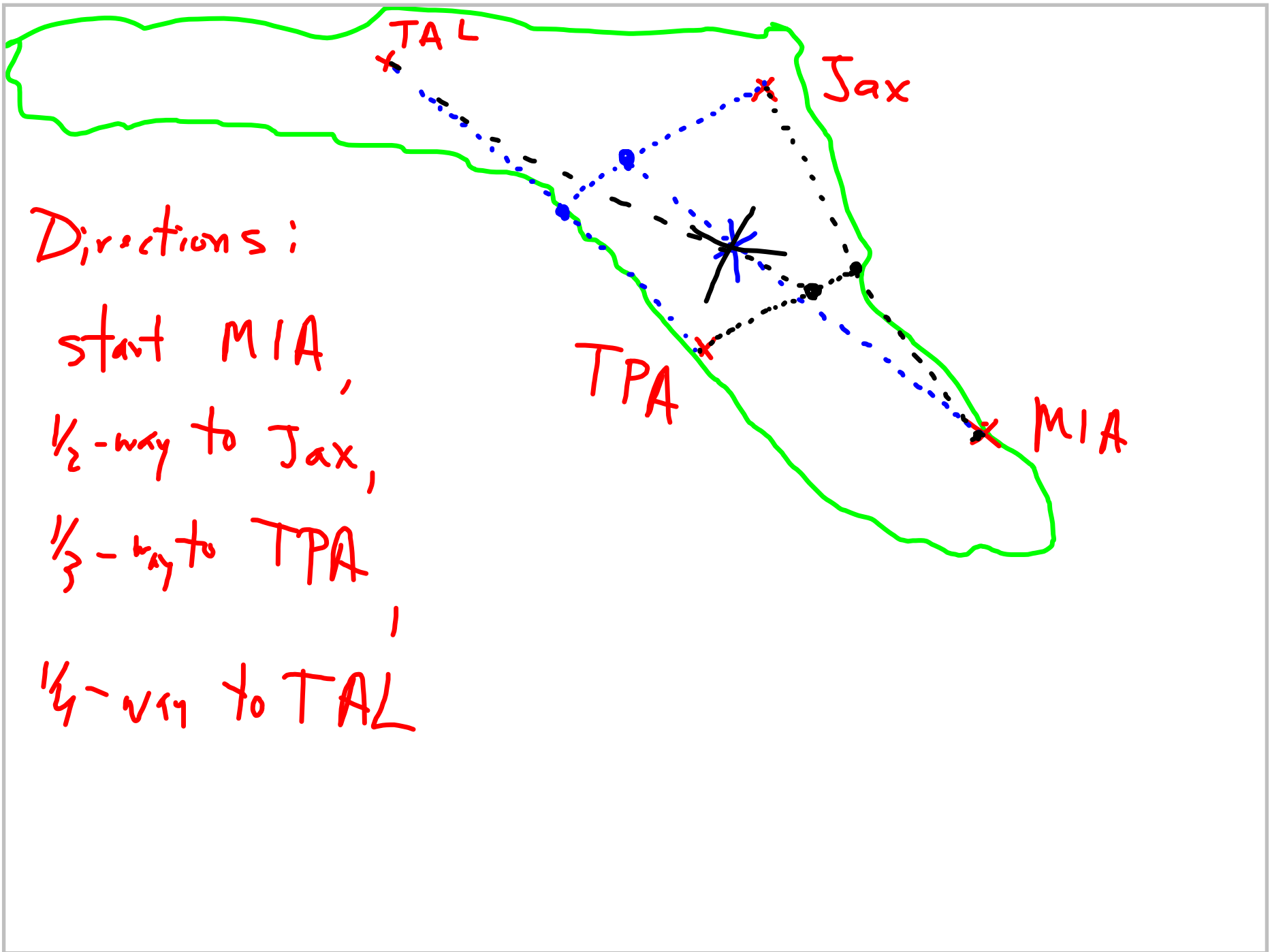
Think of $\vec{A} - \vec{B}$ as
 $\vec{A} + (-\vec{B})$.

This is clumsy.



$\vec{A} - \vec{B}$ is " \vec{A} ", relative
to \vec{B} ."





Directions:

- start MIA,
- 1/2-way to Jax,
- 1/3-way to TPA,
- 1/4-way to TAL

