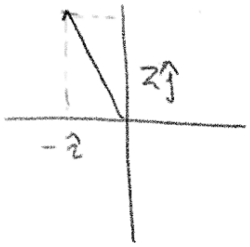
Vectors are relative to the coordinate system.

To make use of vectors in other coordinate systems. you must translate them.

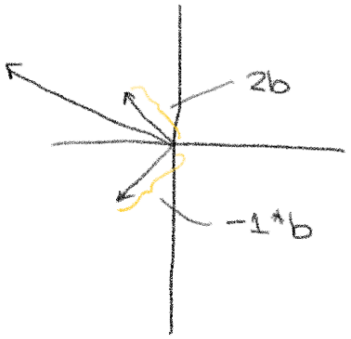
$\begin{bmatrix} -1 \\ 2 \end{bmatrix} \Rightarrow$



on transformation the same vector transformation will hold true.

The transformation from one coordinate system to another can be done with a matrix.

$\begin{bmatrix} -1 \\ 2 \end{bmatrix} \Rightarrow$



*Some other basis

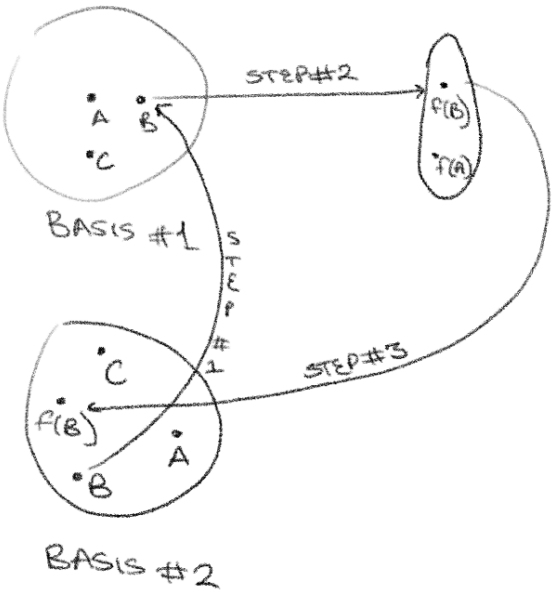
$$\underbrace{\begin{bmatrix} a & \cdots \\ \vdots & z \end{bmatrix}\begin{bmatrix} a \\ \vdots \\ z \end{bmatrix}}$$

transforms this systems vector to another systems representation

To go from the target system and return to the origin system, you must perfo the <u>inverse</u> transforma of basis vectors.

HOW TO TRANSLATE

A MATRIX



STEP 1 – translate vector to known basis system

STEP 2 – transform the vector using M.

STEP 3 – translate transformed vector back to the original coordinate system.

STEP 4 – aggregate the translations and transformati to $A^{-1}MA$.