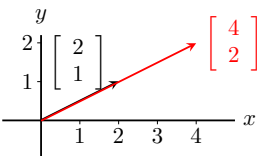


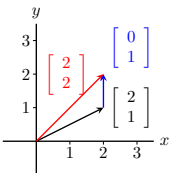
Basic Operations on Vectors

Scalar multiplication (entry by entry):

$$2 \begin{bmatrix} 2 \\ 1 \end{bmatrix} = \begin{bmatrix} 4 \\ 2 \end{bmatrix} \iff$$


that is, double the length of the vector (what do you think multiplying by -1 does?)

Vector addition (entry by entry):

$$\begin{bmatrix} 2 \\ 1 \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} = \begin{bmatrix} 2+0 \\ 1+1 \end{bmatrix} = \begin{bmatrix} 2 \\ 2 \end{bmatrix} \iff$$


that is, tail to head, then tail to head makes tail to head