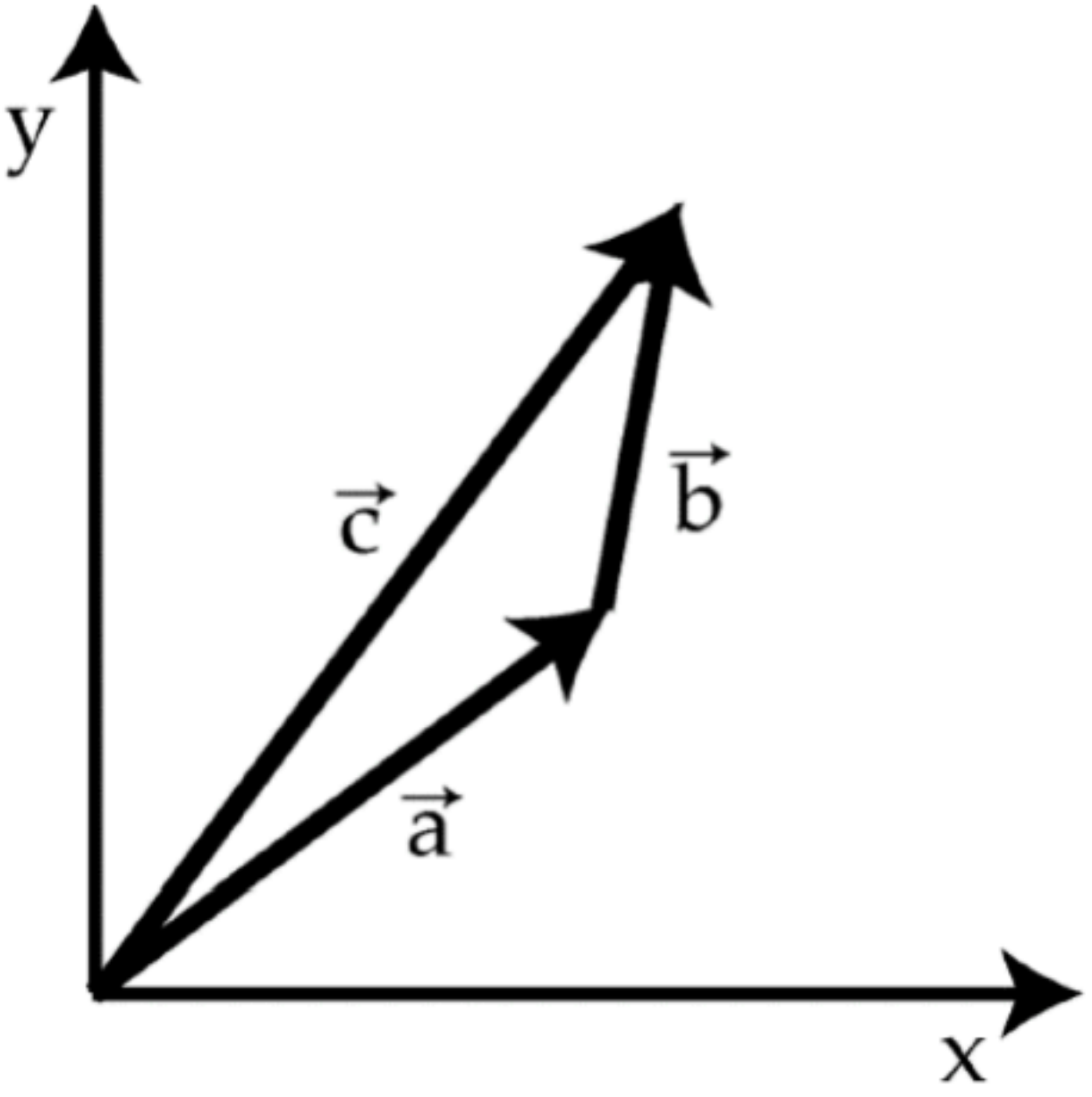
vector addition and subtraction


y
$\vec{c}$
$\vec{b}$
$\vec{a}$
x

vector addition and subtraction

- Graphically
  - think of adding two vectors together as placing two line segments end-to-end, thus maintaining distance and direction
  - $\vec{a} + \vec{b} = \vec{c}$
- Numerically
  - we add vectors component-by-component
  - example: $\vec{a} = [4,3]$ and $\vec{b} = [1,2]$ then

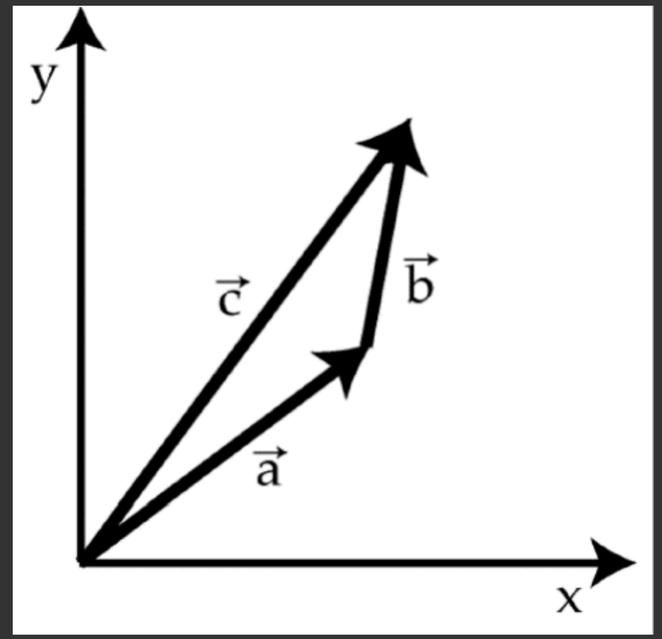
$$\vec{c} = [4,3] + [3,2] = [4 + 1,3 + 2] = [5,5]$$

  - similarly for vector subtraction:

$\vec{a} = [4,3]$ and $\vec{b} = [1,2]$ then

$$\vec{c} = [4,3] - [3,2] = [4 - 1,3 - 2] = [3,1]$$

- Vector addition has a very simple interpretation in the case of things like displacement (ex ship)



scalar multiplication