- Vectors have magnitude and direction

$$\vec{A} \qquad \vec{B}$$
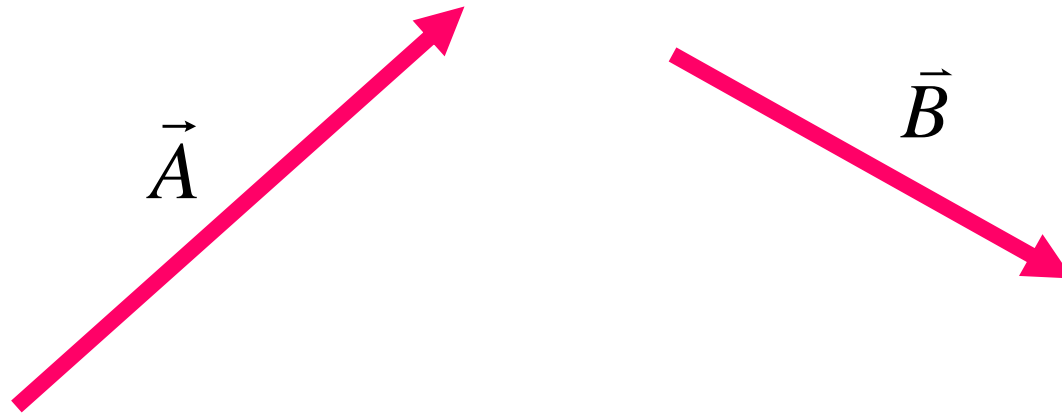
- Symbols: $\vec{A}, \vec{B}$
  Without arrow, just magnitude
  or size. $A = |\vec{A}|$

$$\vec{C} = \vec{A} + \vec{B}$$

+ means tail-to-tip

$\vec{B}$

End

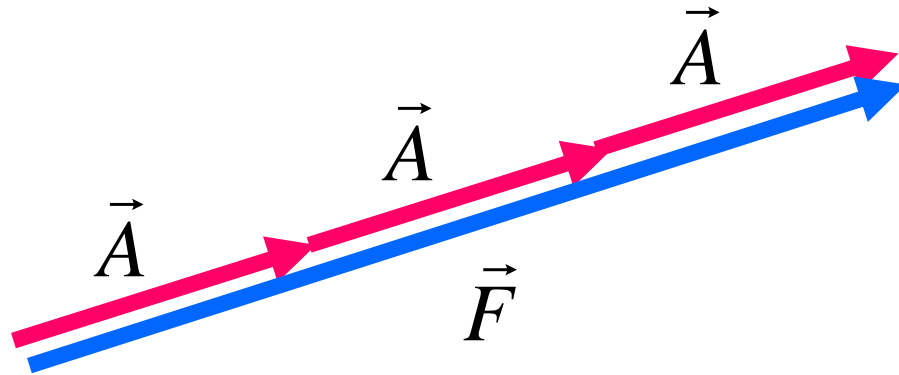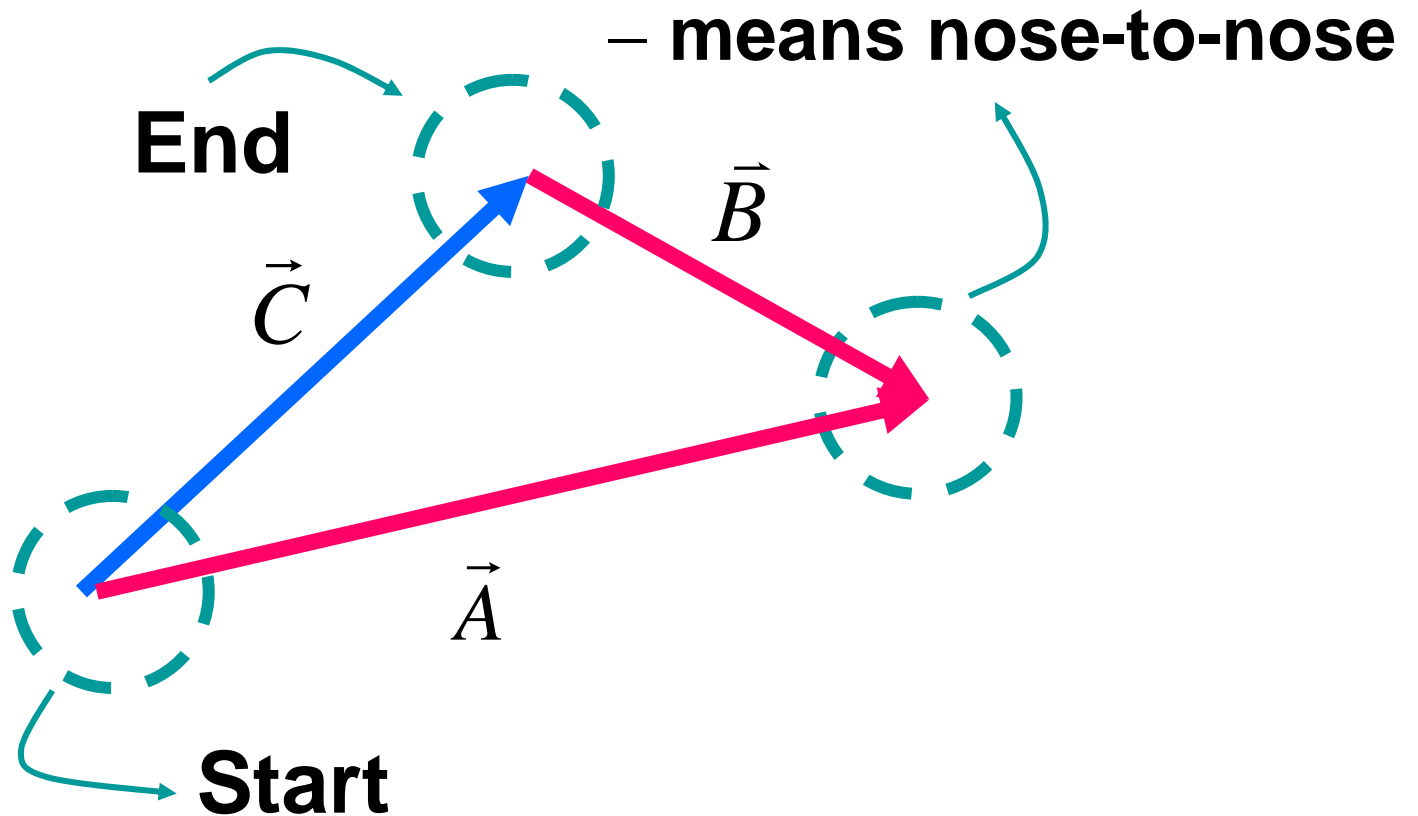$\vec{A}$

$\vec{C}$

= means same start
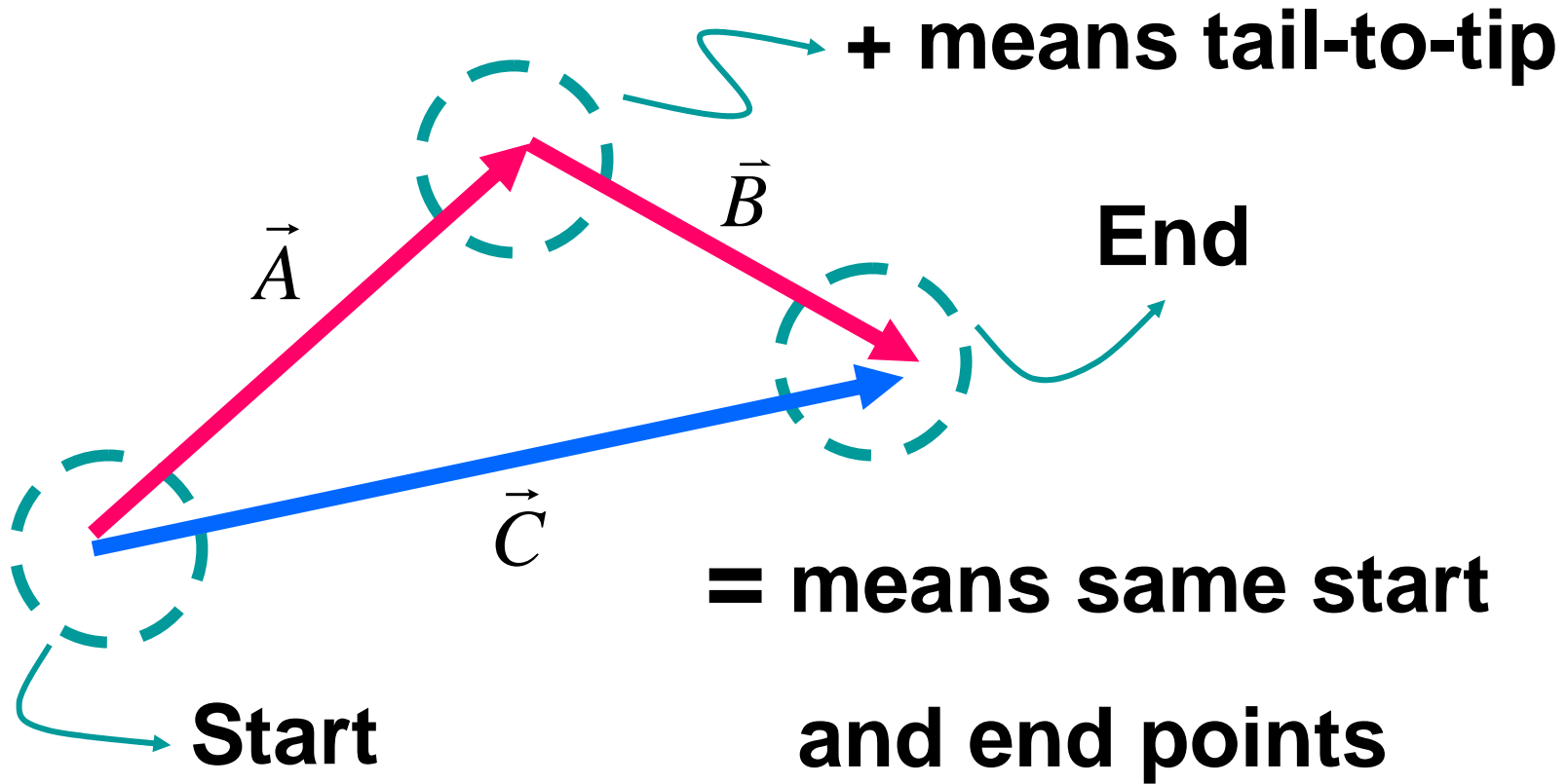
Start

and end points

Multiplication by a scalar

$$\vec{F} = 3\vec{A}$$

$$\vec{F} = \vec{A} + \vec{A} + \vec{A}$$

Subtraction $\vec{C} = \vec{A} - \vec{B}$
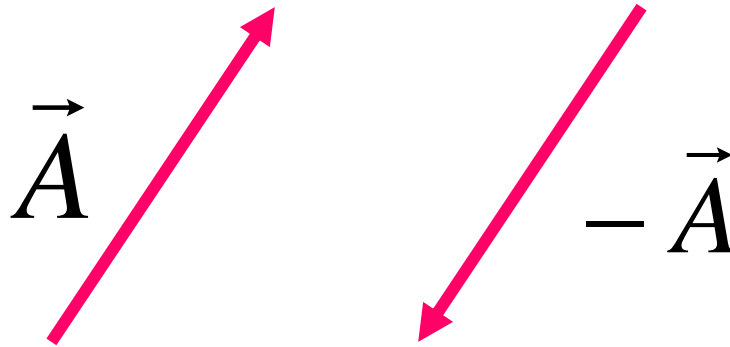
$-$ **means nose-to-nose**

End

$\vec{C}$

$\vec{B}$

$\vec{A}$

Start

$$\vec{A} = \vec{C} + \vec{B}$$

OHQ

Negative Vectors

The negative of a vector has the same size but points in the opposite direction.

$$\vec{A} \qquad\qquad -\vec{A}$$

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

General method

- Pick any start and end points
- Following an arrow in same direction is +
- Follow in opposite direction is –

$$\vec{A} - \vec{B} + \vec{C} = \vec{E} - \vec{D}$$