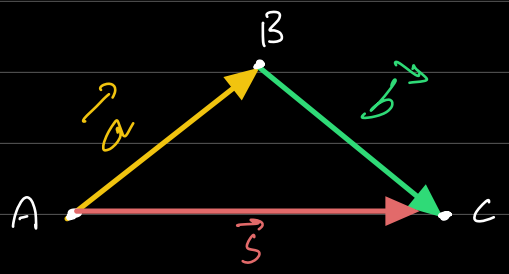
Adding vectors



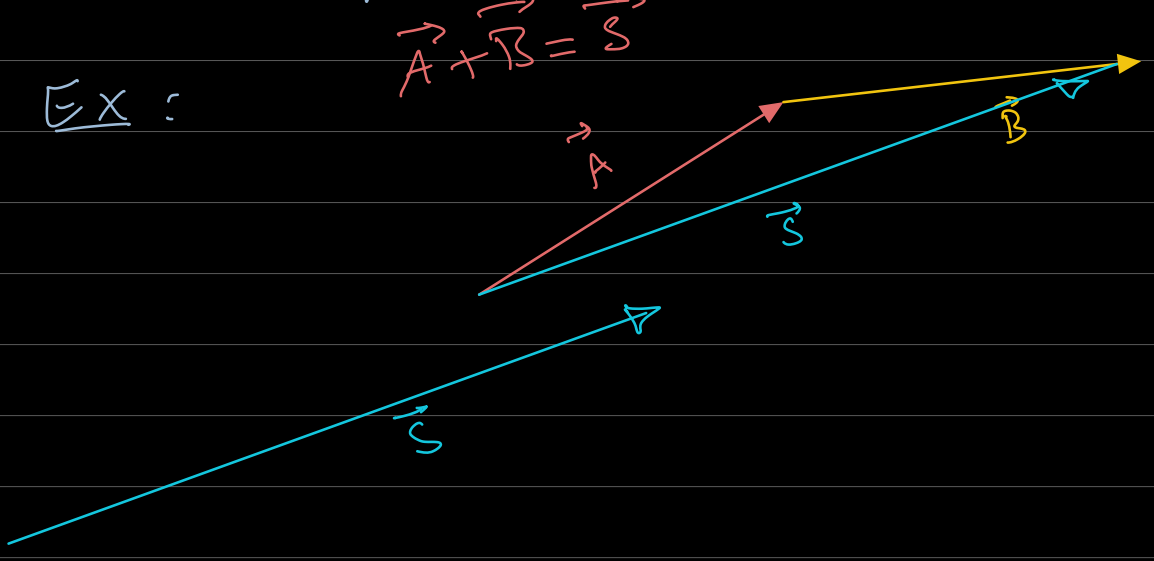
$$\vec{s} = \vec{a} + \vec{b}$$

Steps: (Tip-to-tail rule)

1. On paper sketch vector $\vec{a}$
2. Sketch vector $\vec{b}$ to the same scale
3. put vector's $\vec{b}$ tail at the head of $\vec{a}$
4. The vector sum $\vec{s}$ is the vector that extends from the tail of $\vec{a}$ to the head of $\vec{b}$.

Ex:

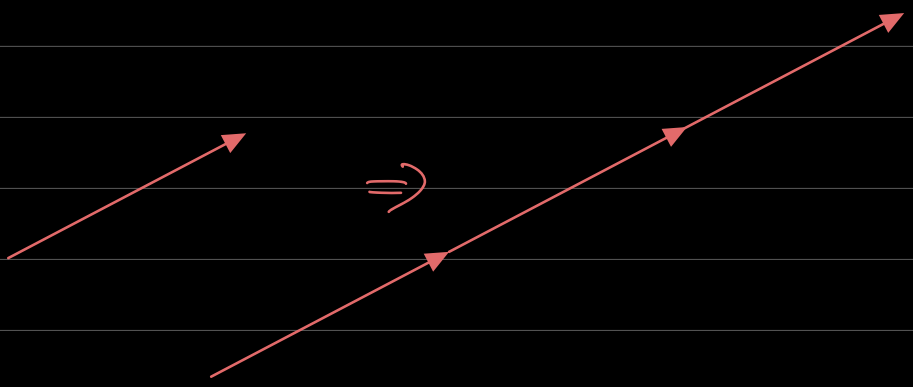
$$\vec{A} + \vec{B} = \vec{S}$$



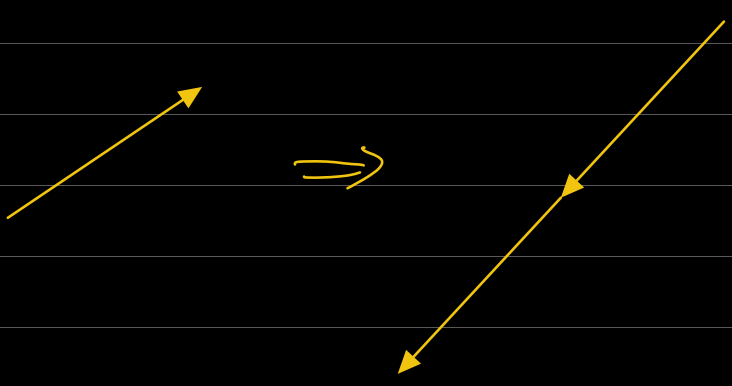
Multiplying by a scalar

scalar $= c \in \mathbb{R}$

$\vec{A} \longrightarrow 3\vec{A}$



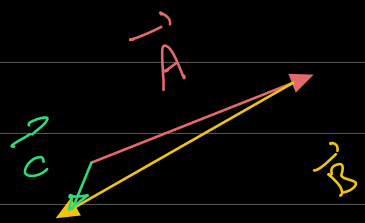
$\vec{A} \longrightarrow -2\vec{A}$



* Vector Subtraction

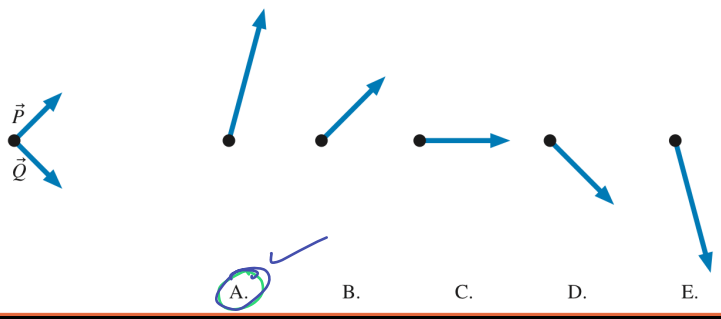
$\vec{A}$, $\vec{B}$

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



*Example:

STOP TO THINK 3.1 Which figure shows $2\vec{P} - \vec{Q}$?



$2\vec{P} - \vec{Q}$

$= 2\vec{P} + (-\vec{Q})$

$-\vec{Q}$ $\vec{P}$ $2\vec{P}$