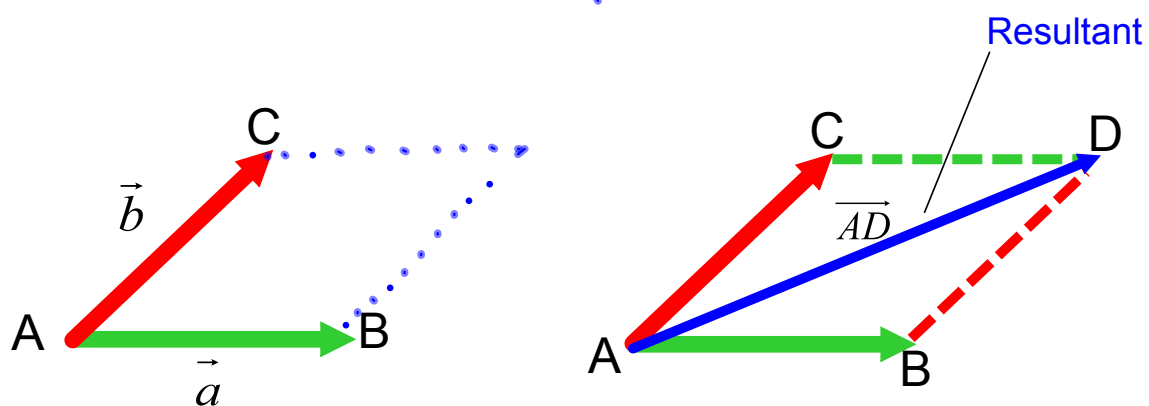


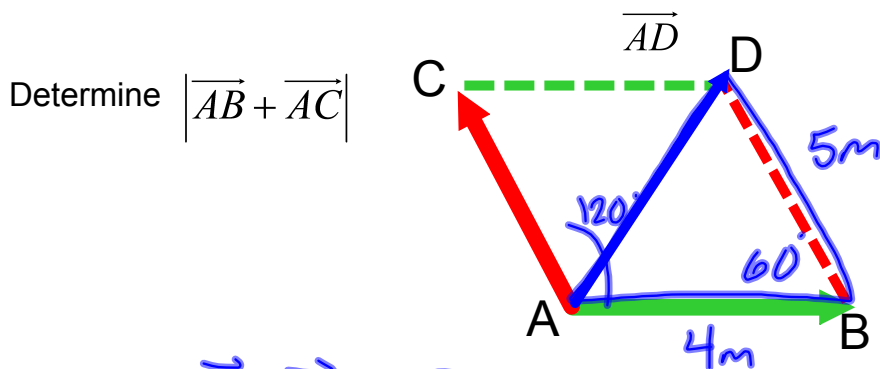
Lesson 2 - Vector Addition & Subtraction

Adding Vectors Parallelogram Law *p.283*



$$\vec{a} + \vec{b} = \overrightarrow{AB} + \overrightarrow{BD} = \overrightarrow{AD}$$

Example: \vec{AB} and \vec{AC} are two vectors with magnitudes 4m & 5m respectively with an angle of 120° between them.



$$|\vec{AB} + \vec{AC}| = \sqrt{|\vec{AB}|^2 + |\vec{AC}|^2 - 2|\vec{AB}||\vec{AC}|\cos 60^\circ}$$

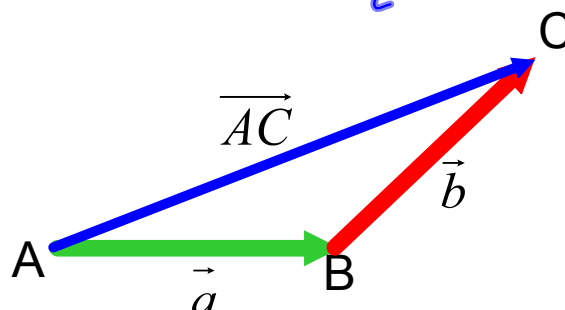
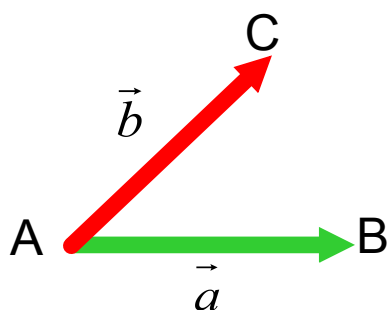
$$= \left(16 + 25 - \frac{40}{2}\right)^{1/2}$$

$$= \sqrt{21}$$

\therefore The magnitude of the resultant is $\sqrt{21}$ m.

Adding Vectors Triangle Law - "Tail to Tip"

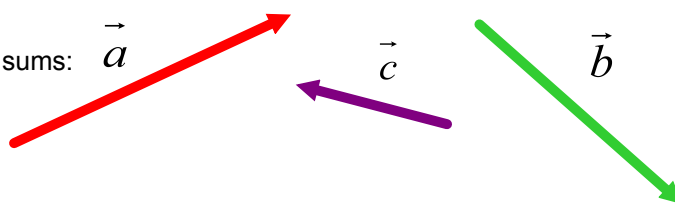
Tip to tail Mr. Finn!!



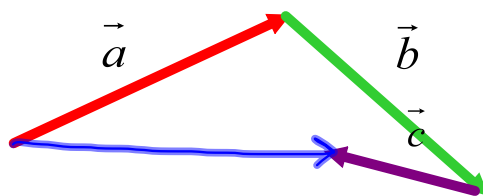
$$\vec{a} + \vec{b} = \vec{AB} + \vec{BC} = \vec{AC}$$

$$\begin{aligned} & \vec{AD} + \vec{BC} + \vec{DB} \\ & = \vec{AD} + \vec{DB} + \vec{BC} = \vec{AC} \end{aligned}$$

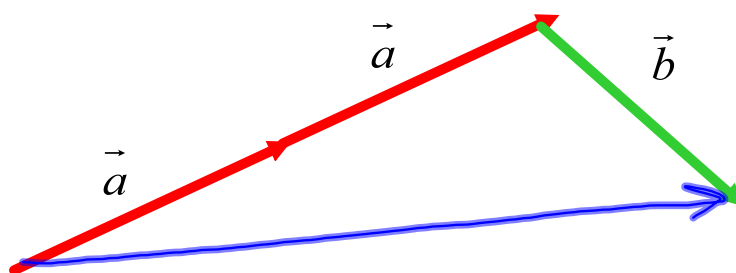
Example 2: Sketch the following vectors sums:



a) $\vec{a} + \vec{b} + \vec{c}$



b) $2\vec{a} + \vec{b}$

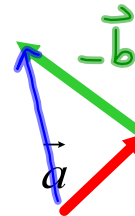


Vector Subtraction: The opposite of \vec{a} is $-\vec{a}$

The difference between vectors \vec{a} and \vec{b} is found by adding the opposite vector $-\vec{b}$ to \vec{a} using the triangle law.

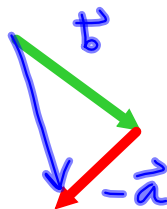
Example:

a) $\vec{a} - \vec{b} = \vec{a} + (-\vec{b})$



b) $\vec{a} - \vec{a} = \vec{0}$ — This is known as the zero vector

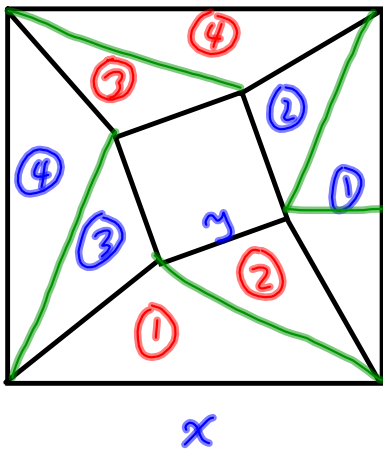
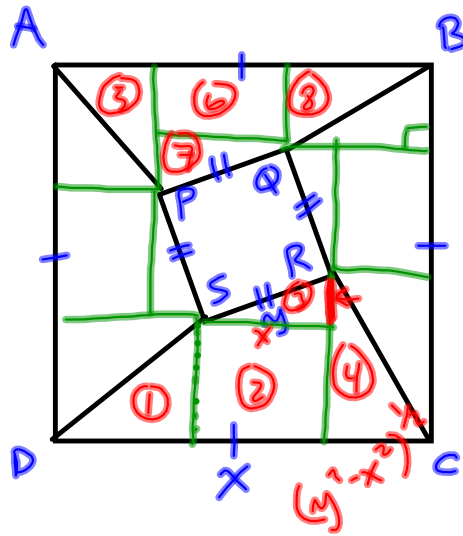
c) $\vec{b} - \vec{a} =$



Homework: P 290 #1-5, 7,9,11-13

Euclid Fun (FRIDAY)

9b)



A_1

