

Physics 160

Extra Credit #6

Adding & Subtracting Vectors

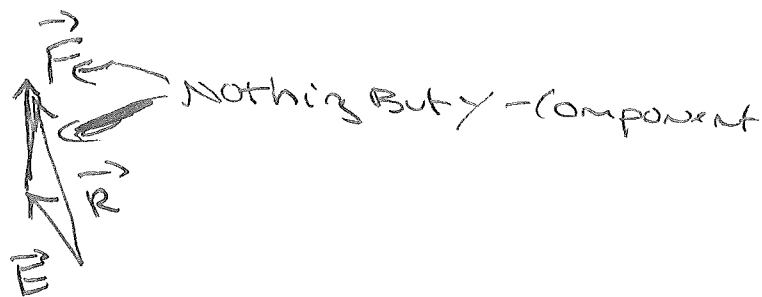
A) Largest x-component?

Of the choices offered: $\vec{C} + \vec{D}$



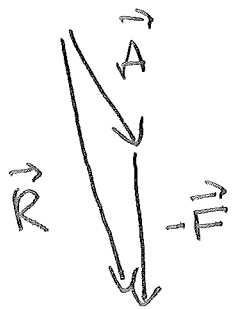
← most distance in x

B) Largest y-component? $\vec{E} + \vec{F}$



Nothing But y-component

c) When subtracted? $\vec{A} - \vec{F}$



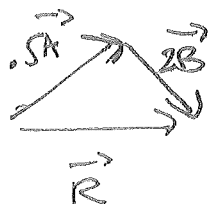
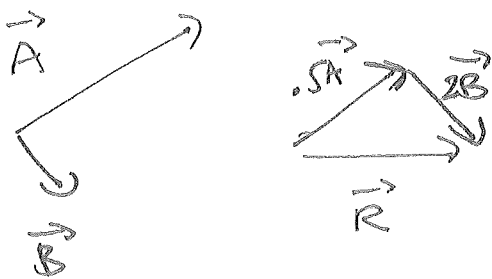
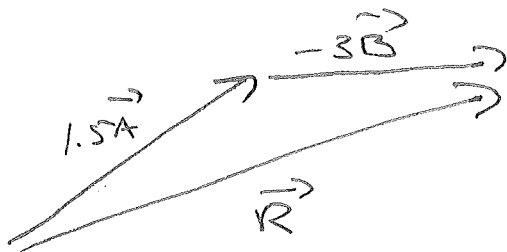
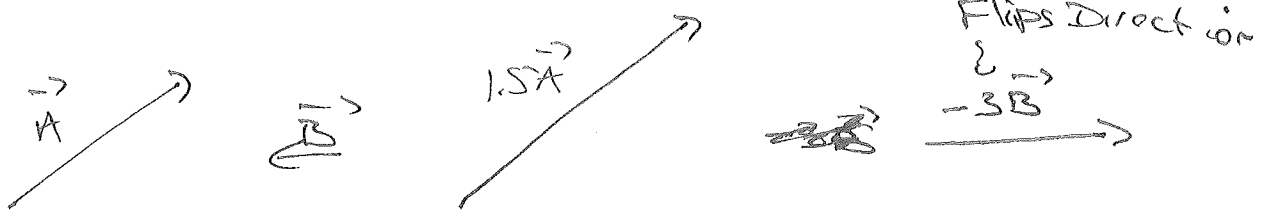
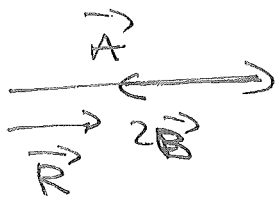
Everything else made smaller lengths.

Adding Scalar Multiples of vectors:

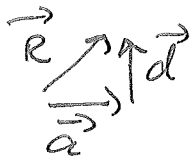
I think this one's answers a pretty obvious when you see them.



so $2\vec{B}$:



Ranking



$$\vec{a} = 1 \text{ unit}$$

$$b = 1 \text{ unit}$$

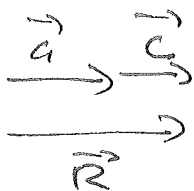
\Rightarrow magnitude of

$$|\vec{a} + \vec{b}| = |\vec{a} + \vec{d}| = \sqrt{2}$$



$$\vec{e} = \frac{1}{2} \text{ unit to left} \Rightarrow |\vec{a} + \vec{e}| = \frac{1}{2} \text{ unit}$$

\vec{d} ~~is~~ is 1 unit



$$|\vec{a} + \vec{c}| = 1.5 \text{ units}$$



appears to be 1 unit

Largest:

$$|\vec{a} + \vec{c}|$$



Smallest

$$\vec{a} + \vec{e}$$

Rank Angles: $\vec{a} + \vec{b}$ in 4th Quadrant \Rightarrow Between 270° and 360°

Most of you PROBABLY realize that since sides are equal that $\theta = 360^\circ - 45^\circ = 315^\circ$

$\vec{a} + \vec{d}$ at 45°

$\vec{a} + \vec{e}$ to RIGHT $\Rightarrow 0^\circ$

\vec{d} is up $\Rightarrow 90^\circ$

$\vec{f} + \vec{c}$ is at 90°

$\vec{a} + \vec{c}$ to RIGHT $\Rightarrow 0^\circ$

Largest: $\left\{ \begin{array}{l} \vec{d} \\ \vec{f} + \vec{c} \end{array} \right\} \vec{a} + \vec{d} \left\{ \begin{array}{l} \vec{a} + \vec{e} \\ \vec{a} + \vec{c} \end{array} \right.$