

Name: \_\_\_\_\_

- 1) Given the following vectors:

$$\vec{A} = 2\vec{i} - 3\vec{j}, \quad \vec{B} = -9\vec{i} + 5\vec{j}, \quad \vec{C} = -\vec{i} + 2\vec{j} \quad \text{Find:}$$

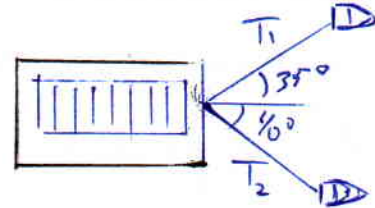
$$\vec{A} + \vec{B} - \vec{C}, \quad |\vec{A} + \vec{B} - \vec{C}|$$

- 2) Given the following points: A(-2,5), B (7,-3). C(-3,-2).

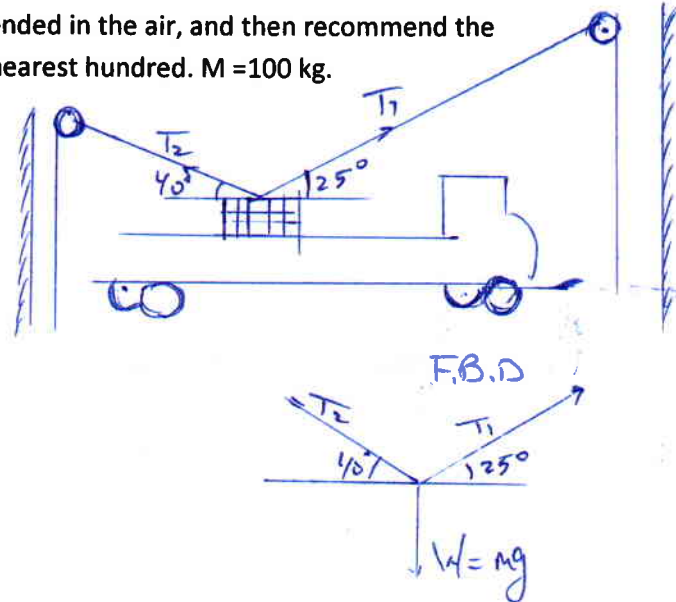
Find the following vectors:  $\overrightarrow{AB}$ ,  $\overrightarrow{AC}$ ,  $\overrightarrow{BC}$

Find  $|\overrightarrow{2BC}|, |\overrightarrow{3AC}|$

- 3) A barge is pulled by two tug boats. If the resultant of the forces exerted by the tugboats is a 8000 lbf along the axis of the barge. Determine the tension in each of the ropes, and then recommend the values needed including the margin of safety to the nearest hundred.

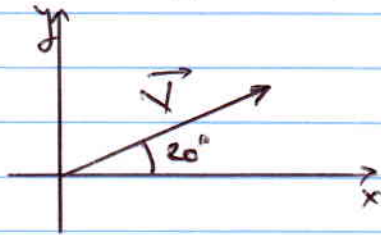


Find the tension in each cable when the load is suspended in the air, and then recommend the needed values including the margin of safety to the nearest hundred.  $M = 100 \text{ kg}$ .



Find the projected components of the following vectors. i.e., find their  $V_x$  and  $V_y$  components.

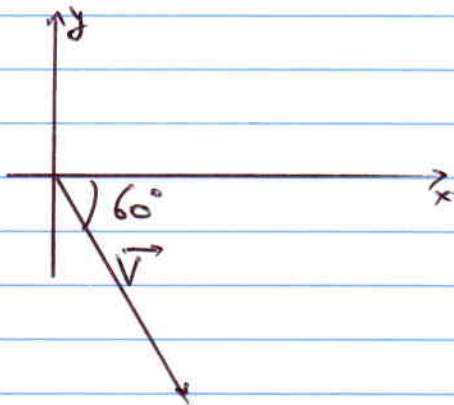
a)



$$|\vec{V}| = 8 \text{ Newtons}$$

Find  $V_x$  and  $V_y$ .

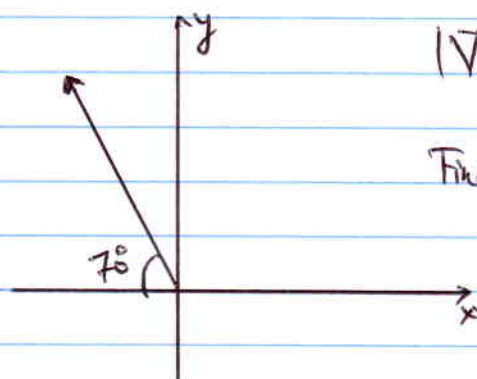
b)



$$|\vec{V}| = 8 \text{ Newtons}$$

Find  $V_x$ ,  $V_y$ .

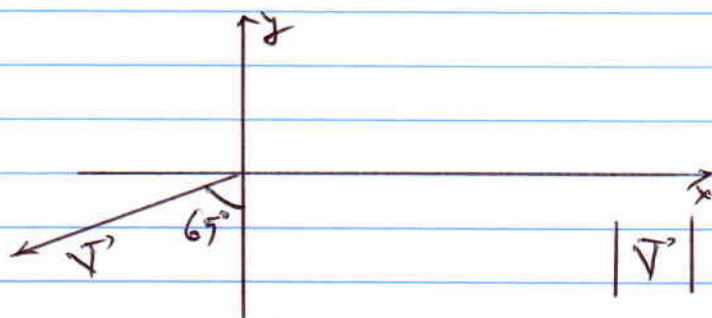
c)



$$|V| = 10 \text{ Newtons}$$

Find  $V_x$ ,  $V_y$

d)



$$|V| = 10 \text{ Newtons}$$

Find  $V_x$ ,  $V_y$ .