

A poorly written homework assignment

(as opposed to a well-written one)

Here is an example of a poorly written homework assignment. Notice that it does not state what the problem is; it does not explain what the variables stand for; the computations come without explanations of their purpose, the work jumps around on the page instead of following linearly down the page; and the answers don't stand on their own.

3.

$$\vec{v} = \langle 200 \cos \theta, 200 \sin \theta \rangle = \langle 200, 0 \rangle$$

$$\vec{w} = \langle 50 \cos \theta, 50 \sin \theta \rangle = \langle \frac{50}{\sqrt{2}}, \frac{50}{\sqrt{2}} \rangle$$

b/c $\theta = 45^\circ$

$$\text{so } \vec{v} = \vec{v}_1 + \vec{v}_2 = \langle 200 + \frac{50}{\sqrt{2}}, \frac{50}{\sqrt{2}} \rangle$$

$$\Rightarrow \langle 235.36, 35.36 \rangle$$

$$|\vec{v}| = \sqrt{235.36^2 + 35.36^2} \Leftrightarrow \theta = \arctan\left(\frac{35.36}{235.36}\right) = 8.4^\circ$$

$$= \sqrt{(235.36)^2 + (35.36)^2} = 238$$

Compare this with a well-written homework assignment.

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A well-written homework assignment

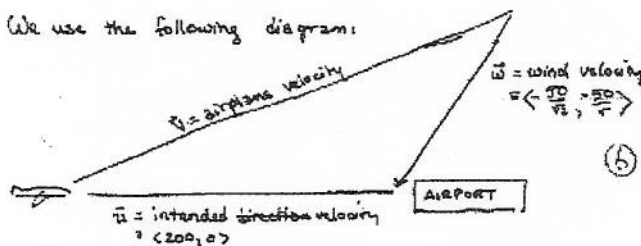
(as opposed to a poorly written one)

Here is an example of a well written homework assignment. Notice that

- It starts with a summary of what the problem is.
- The diagram is large, and is labeled with both variables and words.
- It explains what the purpose of the succeeding computations are.
- When a new set of computations begin, it explains what those computations are for.
- It ends with a statement of the answer which stands on its own.

#3. We are asked to determine the air speed and direction of a plane flying through a 50 mph south westerly wind; we want the plane to land in the airport 200 miles east in one hour. (a)

We use the following diagram:



We are looking for v , the airplane's velocity. From the above diagram, we see that $v + w = u$, or (c)

$$\begin{aligned} v &= u - w \\ &= \langle 200, 0 \rangle - \left\langle -\frac{30}{\sqrt{2}}, -\frac{30}{\sqrt{2}} \right\rangle \\ &= \langle 235.36, 35.36 \rangle. \end{aligned}$$

The speed of the airplane is the magnitude of the velocity: (d)

$$\|v\| = \sqrt{(235.36)^2 + (35.36)^2} = 238 \text{ mph.}$$

The heading is given by $\theta = \arctan\left(\frac{35.36}{235.36}\right) = 149$ radians

So the plane should travel 238 mph at a heading 149 radians north of east, or 8.54 degrees north of east. (e)

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