

HONORS PRECALCULUS CHAPTER 6 REVIEW

1. An airplane is flying with an airspeed of 475 miles per hour with a bearing of 70° . An 80 mile per hour wind is blowing from a bearing of 120° .

- Draw a vector diagram that models this situation.
- If no correction is made for the wind, what is the final bearing of the plane?
- If no correction is made for the wind, what is the final ground speed of the plane?
- What will the plane's coordinates be after 60 minutes? 30 minutes?

1. Determine the component form and magnitude of the vector \mathbf{w} that has initial point $(-8, -12)$ and terminal point $(4, 1)$.

2. Given $\mathbf{u} = \langle 0, -4 \rangle$ and $\mathbf{v} = \langle 4, 6 \rangle$, determine the following:

- $2\mathbf{v} + \mathbf{u}$
- $\mathbf{u} - 3\mathbf{v}$
- $5\mathbf{u} - \mathbf{v}$

3. Find a unit vector in the direction of $\mathbf{v} = 6\mathbf{i} - 4\mathbf{j}$

4. Determine the angle between vectors $\mathbf{u} = 7\mathbf{i} + 2\mathbf{j}$ and $\mathbf{v} = -4\mathbf{j}$. Are these vectors orthogonal?

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