Pre-Calculus Name_____
Vectors Review

1. A ball is thrown with an initial velocity of 65 feet per second at an angle of 43˚ with the horizontal (x-axis). Find the vertical and horizontal components of the velocity.

2. A commercial jet is flying from Miami to Seattle. The jet's velocity with respect to the air is 580 miles per hour and its bearing is 332˚. The wind is blowing from the southwest with a velocity of 60 mph.
   a. Draw a picture.

   b. Write the velocity of the wind as a vector in component form.

   c. Write the velocity of the jet as a vector in component form.

   d. What is the speed of the jet with respect to the ground? What is the direction of the jet?

3. Find the magnitude and direction of the following vectors.
   a. $< 2, -3 >$ b. $< -4, 5 >$ c. $< -2, -6 >$ d. $< 3, -5 >$

4. Find the component form of the vector using the given direction and magnitude.

a. $\theta = 34^\circ$, $|v| = \sqrt{13}$

b. $\theta = 125^\circ$, $|v| = 6$

5. Write the component form of the vector with initial point: (5, 7) and terminal point: (12, -1)

6. Given: u = <-3, 5>, v = <4, 10> find each of the following:

a. 2u + 3v

b. u - v

7. Given **u** = $\langle -2, 5 \rangle$ and **v** = $\langle 4, -3 \rangle$, find each of the following:

a. **u · v**

b. **u · u**

8. Find the angle between the given vectors.

a. $< 2, 6 >$ and $< -13, 3 >$

b. $< -5, 12 >$ and $< -1, -2 >$