**Homework Set #4.1** Name

*All answers must be placed on the answer sheet.*

*Work should be done on a separate sheet of paper and then be stapled to the answer sheet.*

**For #1-3, find the component form of AB. Then, find the magnitude of AB.**

**;**

1. , 2. , 3. ,

<-3, -1> <1, -3> <11,5>

**For #4-6, let and . Find .**

4. 5. 6.

<-1, 4> <5, -6> <-19, 27>

**For #7-8, find the component form of each vector. Draw and label a reference triangle**

7. , angle Q2 8. , angle Q2

>

**Find so that and are orthogonal. Dot product equals 0.**

9a. 9b.

10. A plane is headed due south with an airspeed of 192 mph. A wind with a bearing of 78 degrees is blowing

at 23 mph. Find the groundspeed and resulting bearing of the plane.

Set up a plane vector and a wind vector. Because the plane is flying due south the bearing is. We cannot create a reference triangle for that, but all reference triangles we have drawn have let us to the fact that So for the plane

(the -90 is the standard position angle for the bearing.

So

These are components, we need magnitude and direction, so draw a reference triangle.

Remember, direction is bearing so ignore the negative on the angle and add 90 to get back to North since it’s a bearing. Direction=

11. Eliminate the parameter: ,

So we solve for cosine and sine

Remember, we cannot use inverses here:

Then we use the Pythagorean Identity:

Standard form: Set the equation =0. NO FRACTIONS

**Homework Set #4.1** Name

*ANSWER SHEET*

1. Component Form
2. Component Form

1. Component Form
2. U =
3. U =

1. U =

4. a.
5. Groundspeed\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Bearing\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_