Precalculus Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Vectors Review

Write how you would do the following:

1. Find a vector in component form and linear combination form when given the initial point (a, b) and the terminal point (c,d)

2. Find the magnitude and direction angle of a vector <a,b>

3. Add and subtract 2 vectors <a, b> and <c,d>

4. Find the unit vector of u = <a,b>

5. Write a vector in component form and linear combination form given the magnitude  and direction angle .

6. Find the dot product of <a,b> and <c,d>

7. Find the angle between <a, b> and <c,d>

8. Determine if <a,b> and <c,d> are orthogonal, parallel, or neither

9. The work done by force <a,b> from (c,d) to (e,f)

10. Given an airplane’s direction and speed (x mph at o) and the wind’s direction and speed (y mph at o), find the resultant speed and direction.

11. Find a resultant force.

12. Find projvu, given u <a,b> and v <c,d>. Then write u as the sum of 2 orthogonal components.

13. Write <a, -b> in linear combination form

14. Given **u** = <3,7> **v =** <5, -2> and **w** = <-1, 8>

a. Find and direction angle of **v**

b. Find 3**w** – 2**v**

**c.** Find the unit vector in direction of **u**

d. Determine if **u** and **v** are orthogonal, parallel, or neither.

e. Find the angle between **v** and **w**

f. Find projvu, then write u as sum of its two orthogonal components

g. Find 

15. A cart is being pulled with a force of 50 lbs at angle of 35o. If the cart is pulled 300 feet up an incline of 7o, calculate the work done.

16. An airplane flies at 500 mph on a course 27o N of W. The wind is blowing 45 mph at 45o S of W. Find the resultant speed and direction of the plane.

17. Forces of 50 lbs at 65o, 30 lbs at 140o, and 70 lbs at 225o act on a box. Calculate the resulting force acting on the object.

18. What is difference between (a,b) and <a,b>?