VECTORS PROBLEMS

1. In component form, a vector may be written (5, 49). What are the magnitude and direction of the vector?

2. In component form, a vector may be written (-3, -6). What are the magnitude and direction of the vector?

3. In component form, a vector may be written (5, -6). What are the magnitude and direction of the vector?

4. A vector has a length 27 at an angle of -145°. How would that vector be written in component form?

5. What is the sum of the vectors (92,-6) and (60,-44)?

6. What is the sum of the vectors (13,86) and (-35,30)?

7. What is the sum of a vector of length 78 at 13° and a vector of length 53 at -161°?

ANSWERS

1. The magnitude of the vector is, from the Pythagorean theorem $\sqrt{(5^2+49^2)}=49.25$.   The direction is given by arc tan(49/5)=84.2°.

2. 6.71@243.4°

3. The magnitude of the vector is, from the Pythagorean theorem, $\sqrt{[5^2 +(-6)^2]}=7.81$. The direction is given by
    arc tan[(-6)/5]=-50.2°=+309.8°.

4. The horizontal component is given by 27x cos(-145°)=-22.12. The vertical component is given by 27x sin(-145°)=-15.49.   The component representation is, then, (-22.12,-15.49).

5. (152,-50)

6. (-22,116)

7. Adding vectors in component form,
    (76.00,17.55)+(-50.11,-17.26)=(25.89,0.29) corresponding to 25.9 at 0.64°.