Precalculus Notes: Resolving Vectors

Some problems will involve multiple vectors. We will simply combine all the steps that we have learned previously to solve them.

Step 1: Find the components of each individual vector 

Step 2: Sum the x and y components of all the vectors.

Step 3: Find the magnitude and direction of this component vector.

**Remember:** *magnitude=* and *direction*

Ex 1: An airplane is flying 200 mph at 50° north of east. The wind velocity is 50 mph due south. Find the resulting bearing and velocity of the plane.

Ex 2: An airplane is flying at 100 meters per second at 23° west of south into a wind blowing 30 meters per second at 20° east of north. Find the resulting direction and velocity of the plane.

Ex 3: A motor boat traveling 4 meters per second to the east encounters a current flowing 3 meters per second to the north. Find the impacted direction and speed of the motor boat.

Ex 4: Four trucks are working to pull a car from a ditch. The first truck is pulling with 40N of force at 20°. The second truck is pulling with 33N of force at 37°. The third truck exerts a force of 25N at 95°. Finally, the fourth truck is pulling with a force of 60N at 135°. Find the resulting force and direction at which the car gets pulled from the ditch.