Physics: Two-Dimensional Motion and Vectors – Intro Problems Graphing Vectors

1. Which of the following Quantities are Scalars, and which are vectors?
    a. The acceleration of a plane as it takes off.
    b. The number of passengers on the plane.
    c. The duration of the flight
    d. The displacement of the flight.
    e. The amount of fuel required for the flight.

2. A roller coaster moves 85 m horizontally, then travels 45 m at an angle of 30.0° above the horizontal. What is the its displacement from its starting point? Use graphical techniques.

3. A novice pilot sets a plane's controls, thinking the plane will fly at 2.50×10^2 km/h to the north. If the wind blows at 75 km/h toward the southeast, what is the plane's resultant velocity? Use graphical techniques.

4. Why flying over the Grand Canyon, the pilot slows the plane down to one-half the velocity in item 3. If the wind's velocity is still 75 km/h toward the southeast, what will the planes new resultant velocity be? Use graphical techniques.