Chapter 3 Problem IV (+1) Name _____

1. A football player runs directly down the field for 35 m before turning to the right at an angle of 25° from his original direction and running an additional 15 m before getting tackled. What is the magnitude and direction of the runner's total displacement?

2. A plane travels 25 km at an angle of 35° to the ground, then changes direction and travels 515 km at an angle of 22° to the ground. What is the magnitude and direction of the plane's total displacement?

3. During a rodeo, a clown runs 8.0 m north, turns 35° east of north, and runs 3.5 m. Then, after waiting for the bull to come near, the clown turns due east and runs 5.0 m to exit the arena. What is the clown's total displacement?

4. The record for the longest nonstop closed-circuit flight by a model airplane was set in Italy in 1986. The plane flew a total distance of 1239 km. Assume that at some point the plane traveled 1.25×10^3 m to the east, then 1.25×10^3 m to the north, and finally 1.00×10^3 m to the southeast. Calculate the magnitude of the displacement for this portion of the flight.

Sample Problem

A hiker walks 25.5 km from her base camp at 35° south of east. On the second day, she walks 41.0 km in a direction 65° north of east, at which point she discovers a forest ranger's tower. Determine the magnitude and direction of her resultant displacement between the base camp and the ranger's tower.