

1. In order to avoid a storm, a plane takes off using an indirect route from an airport heading due east. After traveling 100 miles, the pilot changes direction on a heading of $N 25^\circ E$. After another 140 miles, how far is the plane from the airport?

b. At what heading does the radar at the original airport pick up the planes position at that time?

3. The Queen Elizabeth is traveling from London to New York. She leaves port heading $S 20^\circ W$ at 40 mph. After 3 hours, she changes her heading to $S 80^\circ W$. After 10 hours, she has engine trouble. At this point, how far is the ship from London?

b. If the ship were to break down at this point, at what bearing would a rescue boat need to leave from London to head directly to the ship?

5. A plane leaves an airport on a heading of $S 30^\circ E$. After 50 miles, the plane changes course on a heading of $N 55^\circ E$. After another 60 miles, there is a problem with the plane. How far does the pilot have to go to get the plane back to the airport?

b. At what heading does the pilot have to fly the plane to get to the airport?