Answer on Question #44433 – Math - Trigonometry

Problem

A plane flew 150 miles on a course of 2200 and then 130 miles on a course 1300. Then the plane returned to its starting point via the shortest route possible. Find that shortest distance.

Remark

There is problem with formatting in the problem statement. It should be 220° and 130° instead of 2200 and 1300.

Solution

Let O be the origin, and A be the point such that the plane is at 220 degrees due north, and B be the point such that the plane is at 130 degrees. We have: $OA = 150$, and $AB = 130$, and $\angle OAB = 50^\circ + 40^\circ = 90^\circ$. The shortest distance to the start point is OB, and by Pythagorean theorem: $OB = \sqrt{OA^2 + AB^2} = \sqrt{150^2 + 130^2} = \sqrt{39400} \approx 198.5$ miles.