Answer on Question #81506 – Math – Trigonometry

Question

A ship leaves port with a bearing of N 55 degrees W. After traveling 16 miles, the ship then turns 90 degrees and travels on a bearing of S 35 degrees W for 5 miles. At that time, what is the bearing of the ship from port? Round to the nearest tenth.
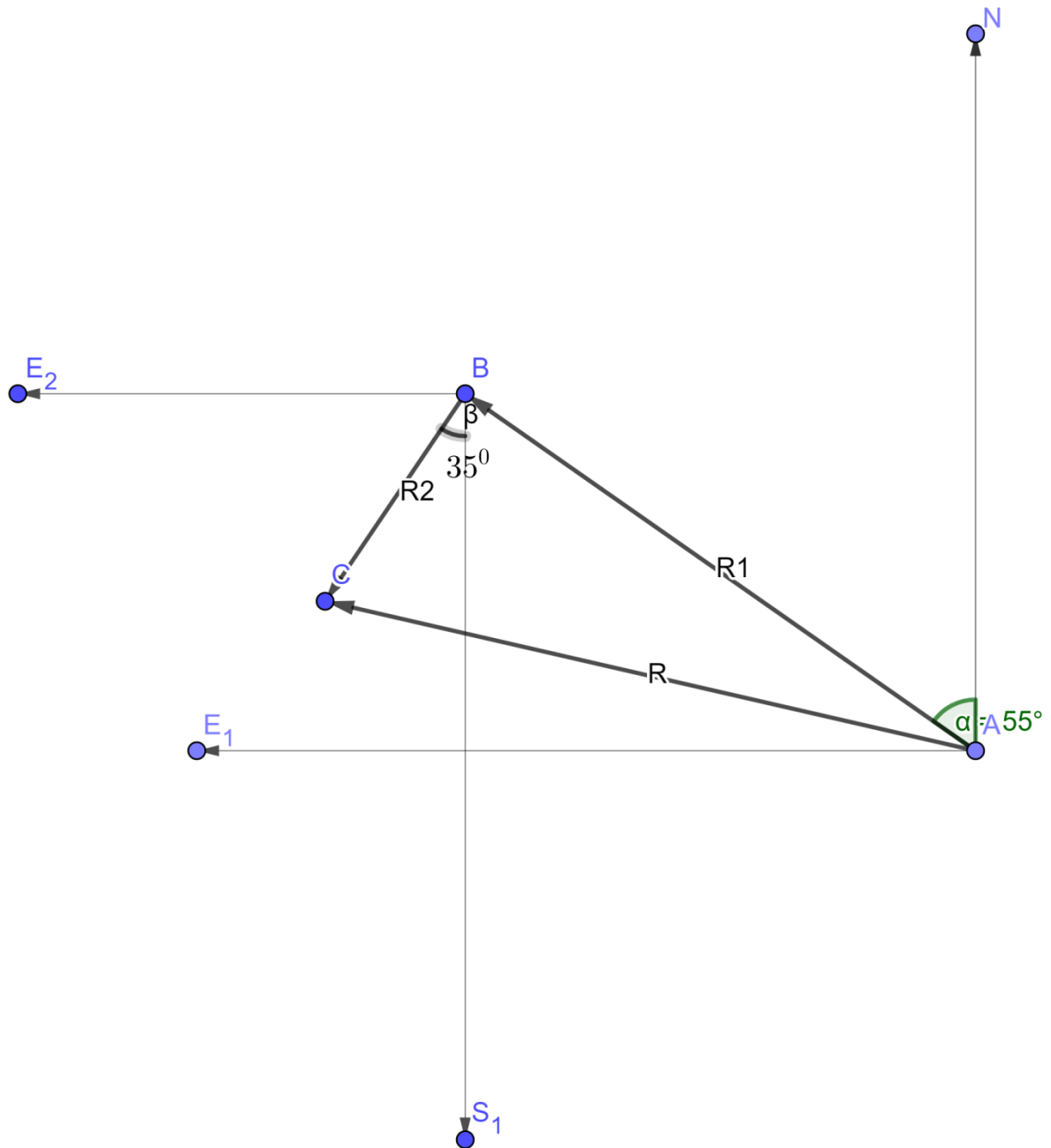
Solution

Fig. 1

We have right triangle as showing at Fig.1

R_1 - first displasment, equal 16 mi with a bearing of N 55 degrees W.

R_2 - second displasment, equal 5 mi with a bearing of S 35 degrees W, after the ship then turns 90 degrees.

Then we obtaine riaght triangle. R_1 and R_2 are catheti, in right triangle (ABC). $\angle B = 90^0$

Mark this angle x, then:

$$x = 55^o + \angle BAC$$

$$\angle BAC = \tan^{-1}\left(\frac{R_2}{R_1}\right) = \tan^{-1}\left(\frac{5}{16}\right) = \tan^{-1}(0.3125) \approx 17.4^o$$

$$x = 55^0 + \angle BAC = 72.35^o$$

Answer: The bearing of the ship from port is aqual N 72.4° W.