Answer on Question #69433 – Math – Geometry

Question

Two boats leave the same bank of sea at the same time. One goes 12km per hour in the direction N550E and other goes 16km per hour in the direction S650E. Find the distance between the boats at the end of two hours.

Solution

The angle between boats:
$$C = 180^0 - 55^0 - 65^0 = 60^0.$$
After 2 hours two sides of the triangle:
$$a = 12 * 2 = 24 \ and \ b = 16 * 2 = 32.$$
By the cosine law, the third side of the triangle:

$$c = \sqrt{a^2 + b^2 - 2abcosC} = \sqrt{576 + 1024 - 2 * 24 * 36 * \frac{1}{2}} =$$
$$= \sqrt{832} \approx 28.844 \ km.$$

Answer: $28.844 \ km.$