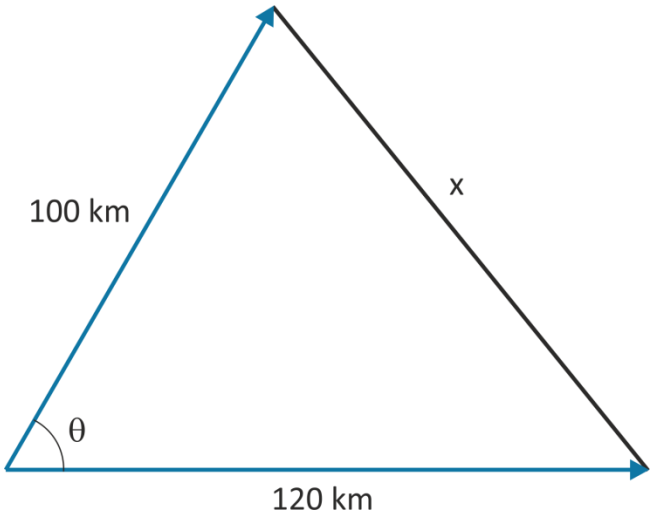
Answer on Question #43670, Physics, Other

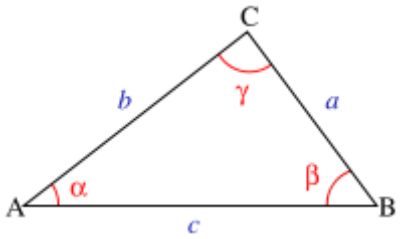
Two cars A and B start the same point at the same time and travel along straight roads that form 60 degrees with each other. After 2 hours, car A has traveled 120 km and car B 100 km. How far apart are the cars after 2 hours?

Solution:



I give the formula for the Law of Cosines and use it to find the missing side length of a triangle.

$$c^2 = a^2 + b^2 - 2ab\cos\gamma$$



In our notations the resultant x is

$$x^2 = 120^2 + 100^2 - 2\cdot 120\cdot 100\cdot \cos 60^\circ = 12400$$

Thus,

$$x = \sqrt{12400} = 111.36 \text{ km}$$

Answer: 111.36 km.