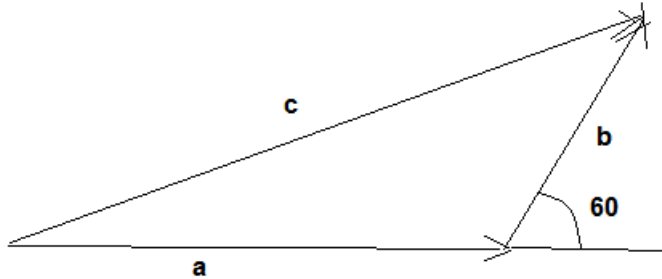**Question #81781, Physics / Other**

A car travels 9km east then 6km north 60° east. Apply the displacement using the law of sine and cosines.

Solution

$$c = a + b$$

Apply the law of cosines:

$$c = \sqrt{a^2 + b^2 - 2ab\cos(180 - 60)}$$

$$c = \sqrt{9^2 + 6^2 - 2(9)(6)\cos(120)} = 13\ km.$$

Apply the law of sine:

$$\frac{\sin\theta}{b} = \frac{\sin 120}{c}$$

$$\theta = \sin^{-1}\left(6\frac{\sin 120}{13}\right) = 24°$$

The displacement is 13 km north 24° east.

Answer provided by https://www.AssignmentExpert.com