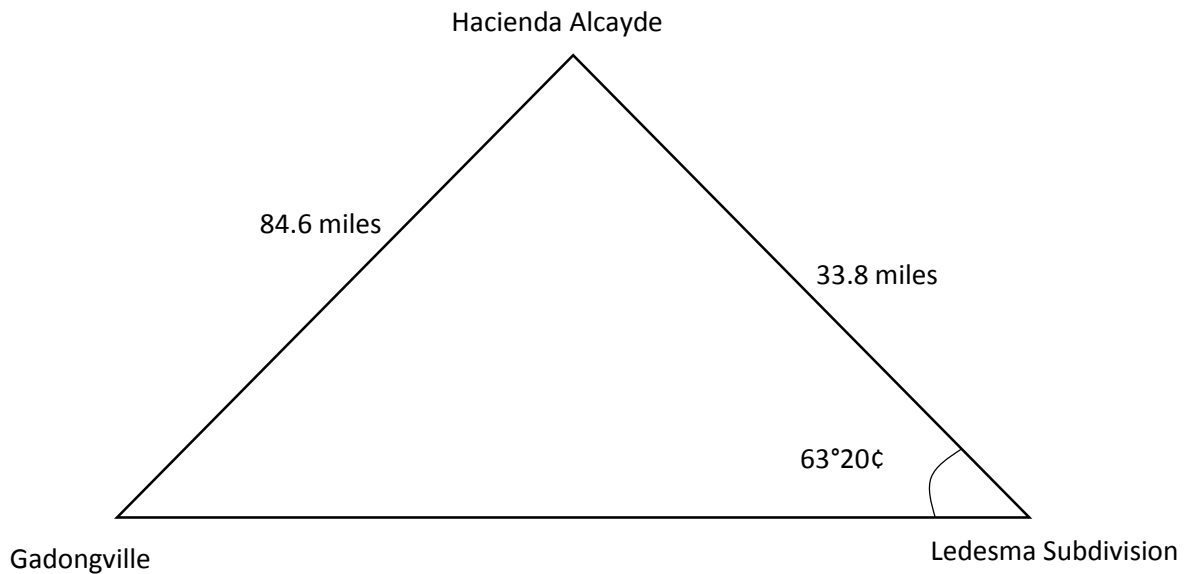


Answer on question 34177 – Math – Geometry

Gadongville and Ledesma Subdivision are two villages located on opposite sides of an island. Hacienda Alcajde is located well away in the island and has a straight highway connection to each village. It is 84.6 miles from Gadongville to Hacienda Alcajde and 33.8 miles from Hacienda Alcajde to Ledesma Subdivision. A surveyor notes that the highway from Ledesma Subdivision to Hacienda Alcajde makes an angle measure of $63^{\circ}20'$ with the line of sight from Ledesma Subdivision to Gadongville. How far apart are the two villages?

Solution



Using the law of cosine we get

$$84.6^2 = 33.8^2 + x^2 - 2 * 33.8x \cos 63^{\circ}20'$$

$$7157.16 = 1142.44 + x^2 - 30.37x$$

$$x^2 - 30.37x - 6014.72 = 0$$

$$D = 24058.88 + 92.34 = 24981.22$$

$$x_1 = \frac{30.37 - 158.05}{2} < 0; \quad x_2 = \frac{30.37 + 158.05}{2} = 94.21 \text{ feet.}$$

Answer: 94.21 feet.