

Unit 5: Non-Right Triangle Trigonometry

5.4 The Cosine Law

Recall from 5.2 (The Sine Law), in a Side-Angle-Side (SAS) situation the Sine Law cannot be used.

The Cosine Law

ex. A surveyor needs to find the length of a swampy area near Fishing Lake, Manitoba. The surveyor sets up her transit at a point A. She measures the distance to one end of the swamp as 468.2 m, the distance to the opposite end of the swamp as 692.6 m, and the angle of sight between the two as 78.6° . Determine the length of the swampy area, to the nearest tenth of a metre.

ex. The Lions' Gate Bridge has been a Vancouver landmark since it opened in 1938. It is the longest suspension bridge in Western Canada. The bridge is strengthened by triangular braces. Suppose one brace has side lengths 14 m, 19 m, and 12.2 m. Determine the measure of the angles opposite the 14-m side to the nearest degree.

ex. Solve $\triangle LMN$, $\angle N = 20^\circ$, $l = 11 \text{ cm}$, and $m = 5 \text{ cm}$. Side lengths and angles to the nearest tenth.

Practice: pg. 119/ # 1 – 3ab, 4ae, 5, 7 – 10



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