Lesson 4 Cosine Law

Tuesday, September 6, 2022 6:58 PM

Lesson 4 Cosine Law

Lesson 4 Cosine Law – Determining An Angle

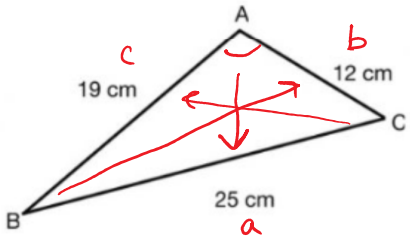
"bookends"

$$cosA = \frac{b^2 + c^2 - a^2}{2bc}$$

$$\cos B = \frac{a^2 + c^2 - b^2}{2ac}$$

Example 1

Determine the measure of angle A.



$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

$$\cos A = \frac{(12^2 + 19^2 - 25^2)}{(2 \cdot 12 \cdot 19)}$$

$$\cos A = -0.2631\ldots$$

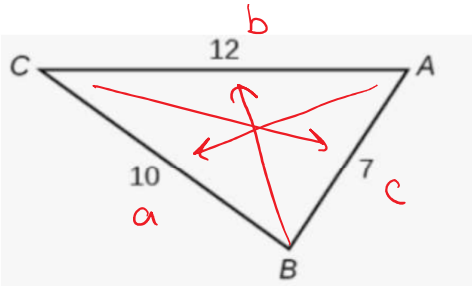
$$A = \cos^{-1}(\text{ans})$$

$$= 105^\circ$$

2nd or shift cos =

Example 2

Determine the measure of angle A.



$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

$$\cos A = \frac{(12^2 + 7^2 - 10^2)}{(2 \cdot 12 \cdot 7)}$$

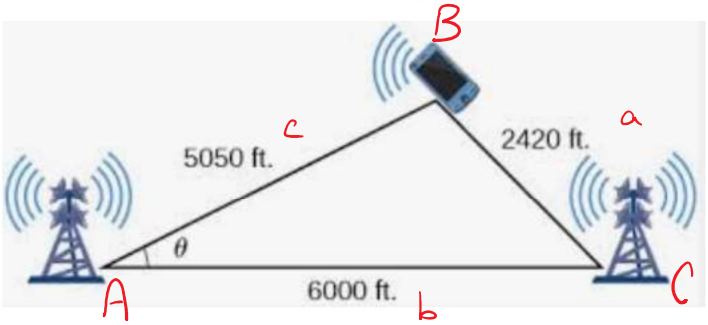
$$\cos A = 0.5535\ldots$$

$$A = \cos^{-1}(\text{ans})$$

$$= 56^\circ$$

Example 3

Determine the measure of angle θ.



$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

$$\cos A = \frac{(6000^2 + 5050^2 - 2420^2)}{(2 \cdot 6000 \cdot 5050)}$$

$$\cos A = 0.918\ldots$$

$$A = \cos^{-1}(0.918\ldots$$

$$A = 23^\circ$$

b) Determine the measure of angle between the cell phone and the east tower.

$$\cos C = \frac{a^2 + b^2 - c^2}{2ab}$$

$$= \frac{2420^2 + 6000^2 - 5050^2}{2(2420)(6000)}$$

$$C = 56^\circ$$