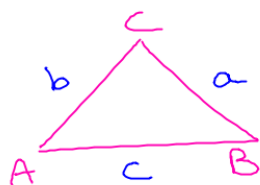


Section 5.6:

Law of cosines.



$$\begin{aligned} a^2 &= b^2 + c^2 - 2bc \cos A & (1) \\ b^2 &= a^2 + c^2 - 2ac \cos B & (2) \\ c^2 &= a^2 + b^2 - 2ab \cos C & (3) \end{aligned}$$

Ex 1

SAS



$$a = 11$$

$$b = 5$$

$$C = 20^\circ$$

$$\begin{aligned} A & \quad a = 11 \\ B & \quad b = 5 \\ C = 20^\circ & \quad c = ? \end{aligned} \quad \begin{aligned} (3) \quad c^2 &= a^2 + b^2 - 2ab \cos C \\ c^2 &= 11^2 + 5^2 - 2(11)(5) \cos 20^\circ \\ c &\approx 6.5 \end{aligned}$$

$$\begin{aligned} (2) \quad b^2 &= a^2 + c^2 - 2ac \cos B \\ 5^2 &= 11^2 + (6.5)^2 - 2(11)(6.5) \cos B \\ B &\approx 15^\circ \\ A &= 180^\circ - 15^\circ - 20^\circ \approx 145^\circ \end{aligned}$$

Ex 2:

$$a = 9$$

$$b = 7$$

$$c = 5$$



A?
B?
C?

$$\begin{aligned} (3) \quad c^2 &= a^2 + b^2 - 2ab \cos C \\ 5^2 &= 9^2 + 7^2 - 2(9)(7) \cos C \\ C &\approx 34^\circ \end{aligned}$$

$$\textcircled{1} \quad a^2 = b^2 + c^2 - 2bc \cos A$$

$$9^2 = 7^2 + 5^2 - 2(7)(5) \cos A$$

$$A \approx 96^\circ$$

$$B = 180 - 34 - 96 \approx 50^\circ$$

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11, 13, 14, 16.