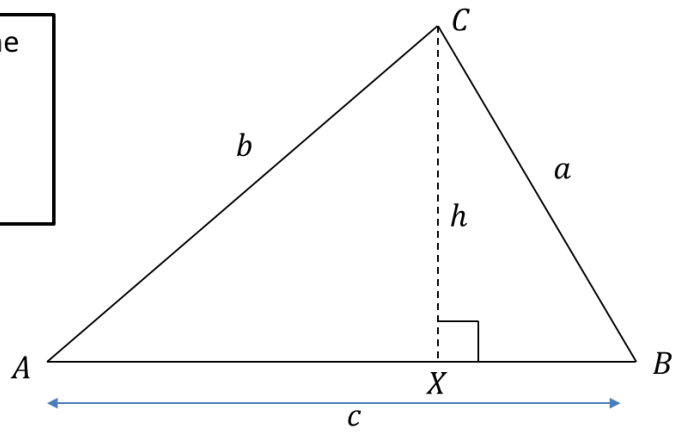
The Sine Rule

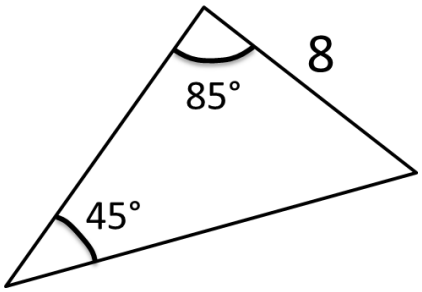
Proof of Sine Rule

The idea is that we can use the common length of ΔACX and $\angle XBC$, i.e. h, to connect the two triangles, and therefore connect their angles/length.



Examples:

1.



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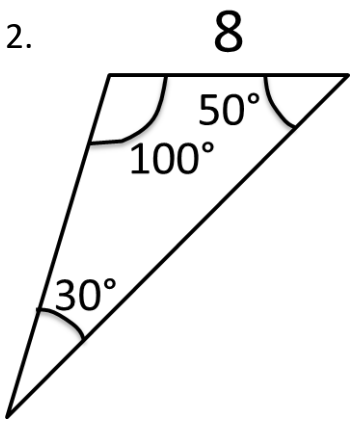

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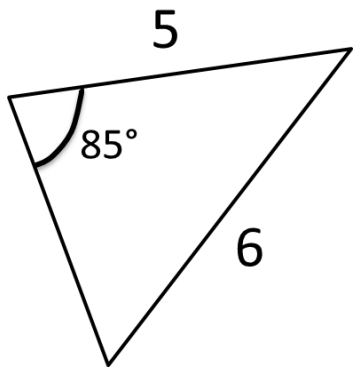

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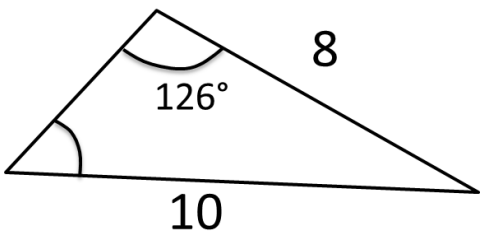
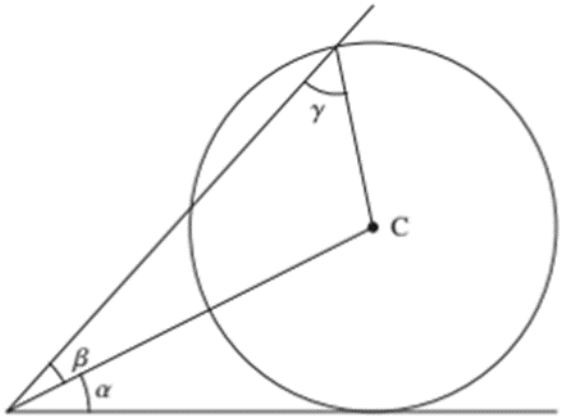


Extension

[MAT 2011 1E]

The circle in the diagram has centre C. Three angles α, β, γ are also indicated.



The angles α, β, γ are related by the equation:

A) $cos\ \alpha = sin(\beta + \gamma)$

B) $sin\ \beta = sin\ \alpha\ sin\ \gamma$

C) $sin\ \beta(1 - cos\ \alpha) = sin\ \gamma$

D) $sin(\alpha + \beta) = cos\ \gamma\ sin\ \alpha$