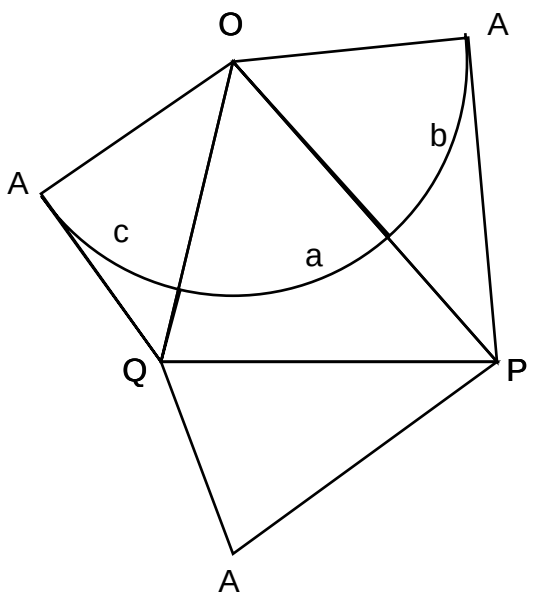
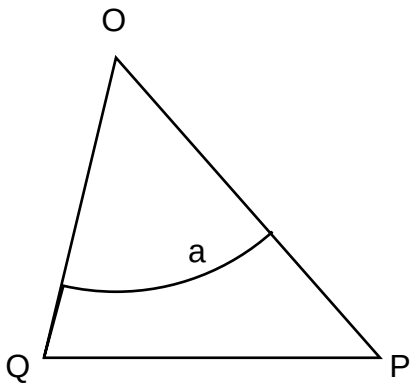

O
A
b
A
c
a
Q
P
A

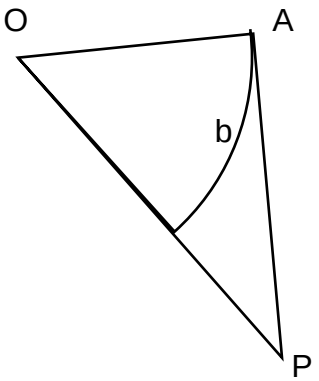
Using the Cosine Law:



$PQ^2 = PO^2 + QO^2 - 2\ PO\ QO \cos POQ$

$PQ^2 = PO^2 + QO^2 - 2\ PO\ QO \cos a$

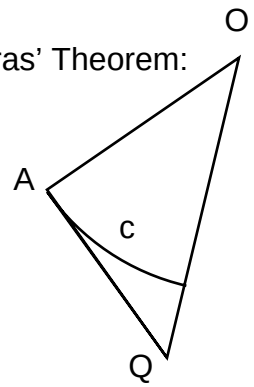
Using Pythagoras' Theorem:



$AO^2 = PO^2 - PA^2$

cos POA = AO/PO
sin POA = PA/PO

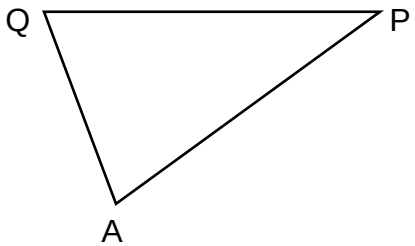
Using Pythagoras' Theorem:



$AO^2 = QO^2 - QA^2$

cos QOA = AO/QO
sin QOA = QA/QO

Using the Cosine Law:



$PQ^2 = PA^2 + QA^2 - 2\ PA\ QA \cos PAQ$

$PQ^2 = PA^2 + QA^2 - 2\ PA\ QA \cos A$