Math 3 Unit 3.2 Notes Law of Sines Ambiguous Cases

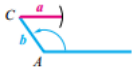
Use Law of Sines when you have: ASS

How many possible triangles?

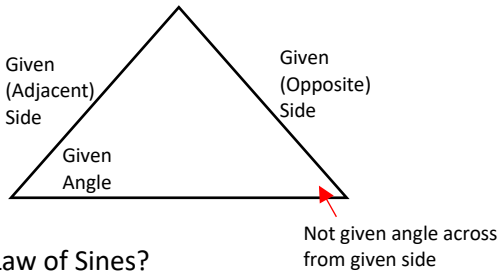
Is the given angle OBTUSE?

→ YES, then there are 0 or 1 possible triangle

Is the opposite side $\leq$ adjacent side?

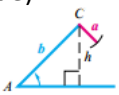
YES, then there are 0 possible triangles 

NO, then there is 1 possible triangle
To solve triangle, use law of Sines 



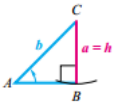
→ NO, then there are 0 or 1 or 2 possible triangles

Is Sin (NOT given angle and across from given side) > 1 when using Law of Sines?

YES, then there are 0 possible triangles 

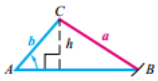
NO, then there is 1 or 2 possible triangles

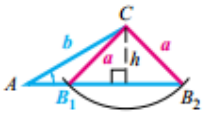
Is Sin (NOT given angle and across from given side) = 1 when using Law of Sines?

YES, then there are 1 possible triangles
To solve triangle, use law of Sines 

NO, then there is still 1 or 2 possible triangles

Is the opposite side $\geq$ adjacent side?

YES, then there is 1 possible triangle
To solve triangle, use law of Sines 

NO, then there is 2 possible triangles
To solve 1st possible triangle, use law of Sines 

To solve 2nd possible triangle, solve for angle across from adjacent side,
(in here we will call that angle B_1)
Take $180 - B_1 = B_2$
Using B_2 as your new angle, use law of Sines, and finish solving the 2nd Triangle.