

Math 113

Monday 3-4-13 (CLASS NOTES)

* USE FOR NON-90° Δ

LAW OF SINES

LAW OF COSINES

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

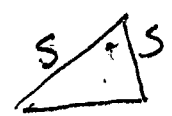
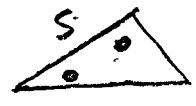
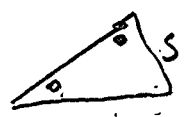
$$a^2 = b^2 + c^2 - 2bc \cos A$$

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

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

* AAS, ASA

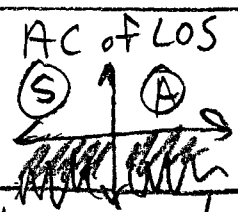
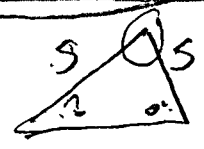
* SAS, SSS



Ambiguous Case of LOS.

SSA

Quad. Eq.



0, 1, or 2 triangles

AAA ⇒ NONE, NOT A UNIQUE TRIANGLE

Summary:

AAS, ASA ⇒ LOS

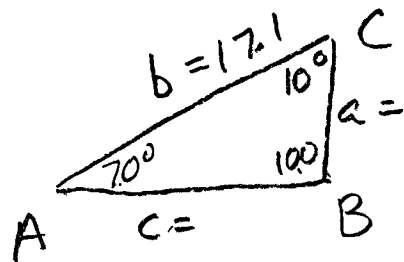
SSS, SAS ⇒ LOC

SSA ⇒ LOS (memorize), LOC (quadratic) eg.

AAA ⇒ NONE

②
P5214

$$b = 17.1 \quad B = 100^\circ \quad C = 10^\circ$$



$$\boxed{A = 70^\circ} \quad \boxed{a = 16.3}$$

$$B = 100^\circ \quad b = 17.1$$

$$C = 10^\circ \quad \boxed{c = 3.0}$$

$$\frac{\sin 70^\circ}{a} = \frac{\sin 80^\circ}{17.1}$$

$$a = \sin 70^\circ \left(\frac{17.1}{\sin 80^\circ} \right) = (.9397) \left(\frac{17.1}{.9848} \right)$$

$$a = 16.314$$

$$\frac{\sin 80^\circ}{17.1} = \frac{\sin 10^\circ}{c} \Rightarrow c = \sin 10^\circ \left(\frac{17.1}{.9848} \right)$$

$$c = (.1736) \left(\frac{17.1}{.9848} \right)$$

$$c = 3.015$$