I $\cos a = \cos b \cos c + \sin b \sin c \cos A$ } To get 3rd side
Given two sides and included angle

$\cos A = \dfrac{\cos a - \cos b \cos c}{\sin b \sin c}$ } Given 3 sides to get the angles

II $\cos A = -\cos B \cos C + \sin B \sin C \cos a$
Given two angles and the side between them to find the 3rd angle.

III $\cos a = \dfrac{\cos A + \cos B \cos C}{\sin B \sin C}$ { Given 3 angles to find the sides

IV $\sin A = \dfrac{2}{\sin b \sin c} \sqrt{\{\sin s \sin(s-a) \sin(s-b) \sin(s-c)\}}$

V $\sin A = \dfrac{1}{\sin b \sin c} \sqrt{1 - \cos^2 a - \cos^2 b - \cos^2 c + 2 \cos a \cos b \cos c}$

VII $\dfrac{\sin A}{\sin a} = \dfrac{\sin B}{\sin b} = \dfrac{\sin C}{\sin c}$ = Sine Formula

VIII (a) Given 2 sides & included angle to find a second angle
(b) " 2 angles & " side " " another side

$\cot a \sin b = \cos b \cos C + \sin C \cot A$
$\cot a \sin c = \cos c \cos B + \sin B \cot A$
$\cot b \sin c = \cos c \cos A + \sin A \cot B$
$\cot b \sin a = \cos a \cos C + \sin C \cot B$
$\cot c \sin a = \cos a \cos B + \sin B \cot C$
$\cot c \sin b = \cos b \cos A + \sin A \cot C$