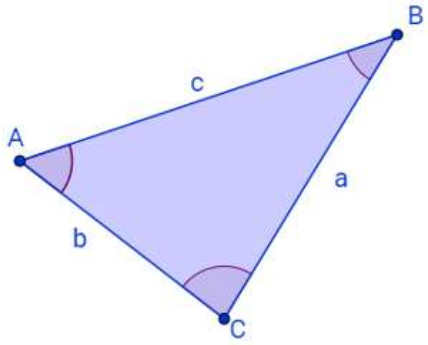
Pre-Calculus CH6a Formulas:



Law of sines

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

To decide which rules to use…

Law of Sines: AAS
ASA
SSA **(Ambiguous case: 0, 1, or 2 Δ's)**

Law of Cosines: SSS
SAS

Right Triangles: Use "SOH-CAH-TOA" and $a^2 + b^2 = c^2$

Law of Cosines:

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$$c^2 = a^2 + b^2 - 2ab \cdot cosC \qquad \cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

$$b^2 = a^2 + c^2 - 2ac \cdot cosB \qquad \cos B = \frac{c^2 + a^2 - b^2}{2ac}$$

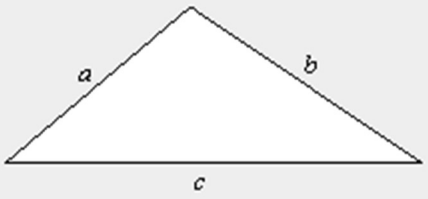
$$a^2 = b^2 + c^2 - 2bc \cdot cosA \qquad \cos C = \frac{a^2 + b^2 - c^2}{2ab}$$

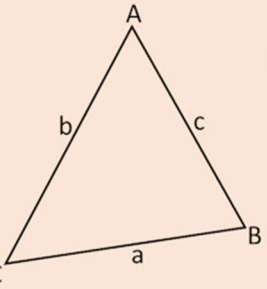
Heron's Formula:

The area of a triangle with side lengths a, b and c is:

$$Area = \sqrt{s(s-a)(s-b)(s-c)}$$

where $s = \frac{a+b+c}{2}$





Triangle area = $\frac{1}{2}ab\sin C$

Product and Quotient Rules for the trigonometric form of complex numbers:

Given : $z_1 = r_1(\cos\theta_1 + i\sin\theta_1)$ $z_2 = r_2(\cos\theta_2 + i\sin\theta_2)$

Product : $z_1 z_2 = r_1 r_2\left[\cos(\theta_1 + \theta_2) + i\sin(\theta_1 + \theta_2)\right]$

Quotient : $\frac{z_1}{z_2} = \frac{r_1}{r_2}\left[\cos(\theta_1 - \theta_2) + i\sin(\theta_1 - \theta_2)\right]$

DeMoivre's Theorem, for the trigonometric form of complex numbers, is used to find *powers* of complex #'s.

$$z^n = \left[r(\cos\theta + i\sin\theta)\right]^n = r^n(\cos n\theta + i\sin n\theta)$$