MA 154 FORMULA SHEET

ADDITION AND SUBTRACTION FORMULAS

$\sin(u + v) = \sin u \cos v + \cos u \sin v$

$\sin(u - v) = \sin u \cos v - \cos u \sin v$

$\cos(u + v) = \cos u \cos v - \sin u \sin v$

$\cos(u - v) = \cos u \cos v + \sin u \sin v$

$\tan(u + v) = \dfrac{\tan u + \tan v}{1 - \tan u \tan v}$

$\tan(u - v) = \dfrac{\tan u - \tan v}{1 + \tan u \tan v}$
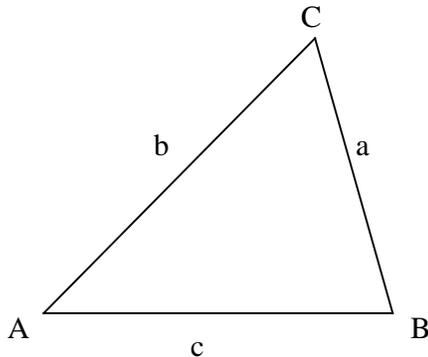
PYTHAGOREAN IDENTITIES

$1 + \tan^2 \quad = \sec^2$

$1 + \cot^2 \quad = \csc^2$

HALF-ANGLE FORMULAS

$\sin \dfrac{}{2} = \pm \sqrt{\dfrac{1 - \cos}{2}}$

$\cos \dfrac{}{2} = \pm \sqrt{\dfrac{1 + \cos}{2}}$

$\tan \dfrac{}{2} = \dfrac{1 - \cos}{\sin}$

C

b   a

A   B
    c

LAW OF SINES

$\dfrac{\sin}{a} = \dfrac{\sin}{b} = \dfrac{\sin}{c}$

LAW OF COSINES

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

ANGLE BETWEEN TWO VECTORS

$\cos \quad = \dfrac{(\vec{a}) \bullet (\vec{b})}{\|\vec{a}\| \|\vec{b}\|}$

STANDARD FORM FOR CONICS:

$$\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1 \qquad\qquad \frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1$$

$$(y-k) = a(x-h)^2 \qquad\qquad (x-h) = a(y-k)^2$$

11/01