MATHEMATICS

ALGEBRA

Quadratic eq.

$$x = -\frac{b \pm \sqrt{b^2 - 4ac}}{2a}$$

Discriminant

$D > 0$	$D = 0$ D
$D = 0$	real root
$D < 0$	$D =$ comp. roots
$D < 0$	$2 =$ comp. roots

How to factor

$x^2 + (a+b)x + ab$
$= (a+o)(x+)$

Completing the square

$a^2 - b^2 = (a+b)(a-b)$

Tricks

$a^2 - b^2 = (a+b)(a-b)$

Difference of two squares.

$a^2 - b^2 = (a+b)(a-b)$

$\int$ ⌀Pfence of txsquare
$a^2 - b^2 = (a+b)(-b)$

Tangent $x \to a \mid \Rightarrow x$

$y = f(a) + f'(a)(x-a)$

Tangent & Normal Li

$y = f(a) + f'(a)(x-a)$

$y = f(a) - \frac{1}{f'^2}(a)(x-a)$

CALCULUS

Derivative

$\frac{a}{dx}(x^n) = nx^{n-1}$

$\frac{d}{dx}(u \pm v) = u' \pm v'$

$\frac{d}{dx}(uv) = \frac{u'v + uv'}{v^2}$

$\frac{d}{dx}\int f(g(x)) = f^2 g(x) g(x)$

Integrals $\int \frac{x^{n1}}{n+1} = \frac{xx+c}{n=1}$

$\int \frac{x^n}{x}dx = \frac{1}{x} = \ln|x| + C$

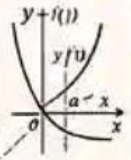
Tangent & Normal Lines

$y = f(a) + f'(a)(x-a)$

$y = f(a) - \frac{1}{f'(a)}(x-a)$

Tangent & Nor $-1)$

$y = f(a) + x$



Normal Line

$y = f(a)$

Standard identity

$\sin^2\theta + \cos^2\theta = 1$

$\tan\theta = \frac{\sin\theta}{\cos\theta}$

$\cos(a+b) =$
$\sin a \cos b \pm \cos 1a \sin b$

$\cos(a+b) =$
$\cos a \cos b \, npsin \, a \sin b$

Tan-ting

$\sin(90^2 - \theta) = \cos\theta$

$\cos(90^2 - \theta) = \sin\theta$

GEOMETRY

Distance

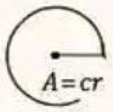
$d = \sqrt{(x_2 - x_1)^2} + \sqrt{\frac{y_2 - y_1)^2}{x_2 - x_1}}$

Slope $m = \frac{y_2 - y_1}{x_2 - x_1}$

Area of circle

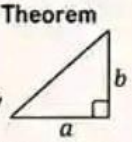
$A = nr^2$

$C = 2nr$



Pythagorean Theorem

$a^2 + b^2 = c^2$



Trigonometry

$\sin\theta = \frac{d}{C}$ **Standard am.**

$\cos\theta = \frac{b}{e}$ $\sin^2\theta + \cos^2\theta =$

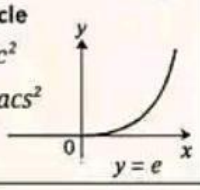
$\tan\theta = \frac{a}{b}$ $\tan\theta = \frac{\sin\theta}{\cos\theta}$

Unit Circle

$un^2\theta t = c^2$

$\sin^2\theta = acs^2$

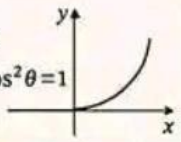
$y = Cx$



Standard identities

$\sin^2\theta + \cos^2\theta = 1$

$\tan\theta =$



Graphs

$y = x^2$

$y = e^x$

$y = e^{\cdots}$