MATHEMATICS *algebra & mathematical symbols*

ALGEBRA

Expanding

{1} $a(b+c) = ab+ac$
{2} $(a+b)^2 = a^2+2ab+b^2$
{3} $(a-b)^2 = a^2-2ab+b^2$
{4} $(a+b)(a+c) = a^2+ac+ab+bc$
{5} $(a+b)(c+d)=ac+ad+bc+bd$
{6} $(a+b)^3 = a^3+3a^2b+3ab^2+b^3$
{7} $(a-b)^3 = a^3-3a^2b+3ab^2-b^3$
{8} $a^2-b^2 = (a+b)(a-b)$
{9} $a^3+b^3 = (a+b)(a^2-ab+b^2)$
{10} $a^3b-ab = ab(a+1)(a-1)$
{11} $a^2-2ab+b^2=(a-b)^2$
{12} $a^3-b^3=(a-b)(a^2+ab+b^2)$

Laws of Exponents

{1} $a^r a^s = a^{r+s}$
{2} $a^r/a^s = a^{r-s}$
{3} $a^r a^s/a^p = a^{r+s-p}$
{4} $(a^r)^s = a^{rs}$
{5} $(ab)^r = a^r b^r$
{6} $(a/b)^r = a^r/b^r$ $(b \neq 0)$
{7} $a^0 = 1$ $(a \neq 0)$
{8} $a^{-r} = 1/a^r$ $(a \neq 0)$

if r and s are positive integers

Logarithms

{1} Log (xy) = Log x+Log y
{2} Log x^r = r Log x
{3} Log x = n ⟷ $x = 10^n$ (Common log)
{4} $\text{Log}_a x = n \longleftrightarrow x = a^n$ (Log to the base a)
{5} Ln x = n ⟷ $x = e^n$ (Natural log)
{6} Log (x/y) = Log x-Log y

e=2.71828183

Quadratic Formula

When given a formula in ... $ax^2+bx+c=0$

The solution can be derived using the quadratic formula →

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

MATHEMATICAL SYMBOLS

+	plus	>	greater than	○	circle
−	minus	<	less than	⌒	arc of circle
±	plus or minus	≥	greater than or equal to	□	square
x	multiplied by	≤	less than or equal to	▭	rectangle
÷	divided by	∞	infinity	▱	parallelogram
=	equal to	:	is to (ratio)	△	triangle
≠	not equal to	::	as (proportion)	∠	angle
≈	nearly equal to	π	pi (--3.14159)	∟	right angle
$\sqrt{x}$	square root of x	∴	therefore	⊥	perpendicular
$\sqrt[n]{x}$	--- root of x	∵	because	||	parallel
%	percentage	$\|x\|$	absolute value of x	°	degrees
Σ	sum of	...	and so on	'	minutes