

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

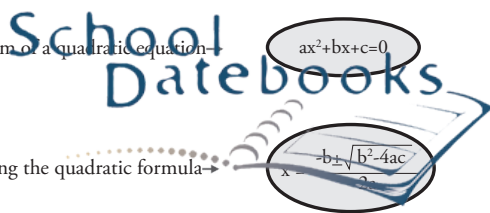
Logarithms

- {1} $\text{Log}(xy) = \text{Log } x + \text{Log } y$
 - {2} $\text{Log } x^r = r \text{Log } x$
 - {3} $\text{Log } x = n \iff x = 10^n$ (Common log)
 - {4} $\text{Log}_a x = n \iff x = a^n$ (Log to the base a)
 - {5} $\text{Ln } x = n \iff x = e^n$ (Natural log)
 - {6} $\text{Log}(x/y) = \text{Log } x - \text{Log } y$
- $e=2.71828183$

REVIEW ONLY

Quadratic Formula

When given a formula in the form of a quadratic equation →



The solution can be derived using the quadratic formula →

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MATHEMATICAL SYMBOLS

+	plus	>	greater than	○	circle
-	minus	<	less than	∩	arc of circle
±	plus or minus	≥	greater than or equal to	□	square
×	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
√x	square root of x	∴	therefore	⊥	perpendicular
ⁿ √x	n-th root of x	∵	because		parallel
%	percentage	x	absolute value of x	°	degrees
Σ	sum of	...	and so on	'	minutes