

How to read Math 2012

(取材自「這些用英語您會說嗎？」保江邦夫著，李伯紀譯，建興文化)

* 畫線的字要一口氣唸完。

1. $ax^2 + bx + c = 0$

a x squared plus b x plus c equals zero.

2. (a) $x^2 - c^2 = (x + c)(x - c)$

x squared minus c squared equals x plus c times x minus c.

(b) 比較： $x + cx - c$: x plus c x minus c.

3. $y > f(x)$: y is greater than f of x.

$y < f(x)$: y is less than f of x.

4. $\frac{a+b}{2} \geq \sqrt{ab}$

a plus b over two is greater than or equal to the square root of a b.

5. $a^3 \pm b^3 = (a \pm b)(a^2 \mp ab + b^2)$

a cubed plus or minus b cubed equals a plus or minus b times a squared minus or plus a b plus b squared.

6. x^n : x to the n. x^{-n} : x to the minus n. x^{m-n} : x to the m minus n.

7. $p(x) = \sum_{k=0}^n a_k x^k$

p of x equals the sum from k equals zero to n of a sub k times x to the k. (or polynomial function of p of x).

8. $\sin A + \sin B = 2 \sin\left(\frac{A+B}{2}\right) \cos\left(\frac{A-B}{2}\right)$

Sine A plus sine B equals two sine of A plus B over two, times cosine of A minus B over two.

9. $\sin 3A = 3 \sin A - 4 \sin^3 A$

Sine three A equals three sine A minus four sine cubed A.

10. $y = e^x$: y equals the exponential x. y equals the exponential of x.

Or, y equals e to the x.

11. $\sinh x$: hyperbolic sine of x . $\cosh x$: hyperbolic cosine of x .
 $\tanh x$: hyperbolic tangent of x . $\coth x$: hyperbolic cotangent of x .

12. $y = \log x$, ($\forall x > 0$): y equals log x for all positive x .

$y = \ln x$, ($\forall x > 0$): y equals natural log x for all positive x .

13. $f' = \frac{df(x)}{dx}$: f prime equals $d f$ of x $d x$. Or,

f prime equals $d f$ of x by $d x$.

$$f''(x) = \frac{d^2 f(x)}{dx^2}:$$

f double prime of x equals d squared f of x $d x$ squared. Or,
 f double prime of x equals d squared f of x by $d x$ squared.

$$f'''(x) = \frac{d^3 f(x)}{dx^3}:$$

f triple prime of x equals d cubed f of x $d x$ cubed. Or,
 f triple prime of x equals d cubed f of x by $d x$ cubed.

14. $\int \tan x dx = -\log |\cos x| + C$

The integral of tangent x $d x$ equals minus log of the absolute value of cosine x plus constant.

15. $\int_a^c f(x) dx = \int_a^b f(x) dx + \int_b^c f(x) dx$

The integral from a to c of f of x $d x$ equals the integral from a to b of f of x $d x$ plus the integral from b to c of f of x $d x$.

16. $\frac{\partial f(x, y)}{\partial x}$: partial f of x y by partial x .

$$\frac{\partial^2 f(x, y)}{\partial x \partial y} = f_{xy}(x, y)$$

partial squared f of x y by partial x partial y equals f sub x y of x y .
 Or, the second partial of f of x y with respect to x and y equals f sub x y of x y .

17. $\vec{u} \cdot \vec{v} = |\vec{u}| |\vec{v}| \cos \theta :$

U dot v equals the norm of u times the norm of v times cosine theta. Or, the inner product of u and v equals the norm of u times the norm of v times cosine theta.

18. $\vec{u} \cdot \vec{v} = \sum_{k=1}^3 u_k v_k$

U dot v equals the sum from k equals one to three of u sub k times v sub k.

19. $\vec{u} \times \vec{v} :$ u cross v. Or, the vector product of u and v.

20. $(u_1, u_2, u_3) \begin{pmatrix} v_1 \\ v_2 \\ v_3 \end{pmatrix}$

The one by three matrix u sub one, u sub two, u sub three, times the three by one matrix v sub one, v sub two, v sub three.

Or, The row vector u sub one, u sub two, u sub three, times the column vector v sub one, v sub two, v sub three.