$\frac{d}{dx}\ln(g(x)) = \frac{g'(x)}{g(x)} |G| = \sum [G:G_{s_i}] \int \cos x \, dx = \sin x + C (A - \lambda I) x = 0 \quad F_n = F_{n-1} + F_{n-2}$  $|\langle x,y\rangle|^2 \le \langle x,x\rangle \cdot \langle y,y\rangle \oint_C f(z) dz = 2\pi i \sum \operatorname{Res}(f(z),z_k) \sum \binom{n}{j} \binom{m}{k-j} = \binom{m+n}{k} P \to Q \equiv \neg Q \to \neg P$  $\frac{d}{dx}f(x) = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h} \quad a^{p-1} \equiv 1 \pmod{p} \quad (x+y)^p \equiv x^p + y^p \pmod{p} \quad \frac{d}{dx}\csc x = -\csc x \cot x$  $x^2 \frac{d^2 y}{dx^2} + x \frac{dy}{dx} + (x^2 - \alpha^2) y = 0 \quad \frac{\partial^2 f(x,y)}{\partial x \partial y} = \frac{\partial^2 f(x,y)}{\partial y \partial x} \quad f(a) = \frac{1}{2\pi i} \oint_{\mathcal{C}} \frac{f(z)}{z - a} \, dz \quad G/H = \{gh \mid g \in G\} \quad \mathbb{Z}/2\mathbb{Z}$  $\sum_{n=0}^{\infty} ar^n = \frac{a}{1-r}$  $\phi(n) = n \prod_{p|n} \left( 1 - \frac{1}{p} \right)$  $\int_{\partial \Omega} \mathbb{F} \omega = \int_{\Omega} d\omega \ \aleph_0$  $\binom{n}{k} = \frac{n!}{k!(n-k)!} \quad \chi(n)$  $f(x) = \sum_{n=0}^{\infty} \frac{f^{(n)}(a)}{n!} (x-a)^n$  $J_f = \frac{\partial \vec{f}}{\partial \vec{x}} a^2 + b^2 = c^2$  $a \cdot b = ||a|| \, ||b|| \cos \theta$ V - E + F = 2 $e^{i\theta} = \cos\theta + i\sin\theta$  $\frac{d}{dx}\tan x = \sec^2 x$  $\sum_{n=1}^{\infty} \frac{1}{n^2} = \frac{\pi^2}{6} \quad \delta(x)$  $\int_{-\infty}^{\infty} e^{-x^2} dx = \sqrt{\pi}$  $\lambda x.(\sum n)^2 = \sum n^3$  $\sin^2 x + \cos^2 x = 1$  $e^{\pi i} + 1 = 0 A \cup \overline{A} = U$  $\frac{a+b}{a} = \frac{a}{b} = \varphi$  $\Box(\Box P \rightarrow P) \rightarrow P$  $\det \exp A = \exp \operatorname{tr} A$  $e^x = \sum \frac{x^n}{n!} \int_{x\to 0}^{cxp} \lim_{x\to 0} \frac{\sin x}{x}$  $\varphi = 1.61803398874$  $p_{A}(A) = 0\pi$   $K_{4} \triangleleft S_{4}$   $f GL_{2}(\mathbb{R})$   $D_{8} < S_{4}$  $\sum_{i=1}^{n} i = \frac{2a}{2}$   $\sum_{k=0}^{n} e^{\left(\frac{2\pi i k}{n}\right)} = 1$  $57 \ \mathcal{U} \ G/H \xrightarrow{\exists ! \bar{f}} G'_{\bigcirc} = \pi R^2$  $\operatorname{Im}(f_i) = \ker(f_{i+1}) M_p = 2^p - 1$  $|\mathcal{O}(x)| = [G:G_x] FA \cong \bigotimes \mathbb{Z}/p_i^{e_i}\mathbb{Z}$  $t_n = n^{n-2}$  $\forall \varepsilon > 0 \exists \delta > 0$  $||fg||_1 \le ||f||_p ||g||_q$  $\zeta(s) = \sum_{n=1}^{n} \frac{LDU}{n^s}$  $E = mc^2$  $\omega_1 \times [0,1) \stackrel{\sim}{G_\delta} = \cap U_i$  $\|\vec{x}\|_p := \left(\sum_{i=1}^n |x_i|^p\right)^{1/p}$  $\sum k^2 = \frac{n(n-1)(2n-1)}{6}$  $0 \rightarrow G \rightarrow H \rightarrow K \rightarrow 0$  $\nabla = \left(\frac{\partial}{\partial x_1}, \dots, \frac{\partial}{\partial x_n}\right)$  $\Gamma(z) = \int t^{z-1} e^{-t} dt$  $\frac{x}{e^x - 1} = \sum_{0 \le n} \frac{B_n x^n}{n!}$  $a^2 - b^2 = (a+b)(a-b)$  $(f*g)(t) := \int_{-\infty}^{\infty} f(\tau)g(t-\tau) d\tau \frac{1}{2} = \triangle$  $\pi(n) \sim \frac{n}{\log n} \mathcal{L}\{f\}(s) = \int_0^\infty f(t)e^{-st} dt$   $\frac{d}{dx}f(g(x)) = f'(g(x))g'(x)$  $\left(\frac{p}{q}\right)\left(\frac{q}{p}\right) = (-1)^{\frac{p-1}{2}\frac{q-1}{2}} H = -\sum p(x)\log p(x)$  $(\wp')^2 = \wp^3 - 60G_4\wp - 140G_6 \uparrow = \{0 | *\}$ 

e = 2.718281828459045235360287471