

$$1_A = \left\{ \begin{array}{ll} 1 & \text{if } x \in A \\ 0 & \text{if } x \notin A \end{array} \right.$$

$$n \underbrace{\uparrow \ldots \uparrow}_n n = n \rightarrow n \rightarrow n$$

$$\begin{aligned} 1\uparrow 1 &= {}^11=1 \\ 2\uparrow\uparrow 2 &= {}^22=4 \end{aligned}$$

$$3\uparrow\uparrow\uparrow 3 = {}^333 = 3\uparrow\uparrow 3\uparrow\uparrow 3 = \underbrace{3^{3^{3^3\cdots^3}}}_{3^{3^3}threes}$$

$$\frac{d}{dx}f(x)=\lim_{\triangle x\rightarrow 0}\frac{f(x+\triangle x)-f(x)}{\triangle x}$$

$$H_2O(\ell)+H_2O(\ell)\rightleftharpoons H_3O^+(aq)+OH^-(aq)$$

$$\Gamma(n+1)\stackrel{\text{def}}{=}\int_o^\infty \exp^{-t}t^ndt$$

$$\gcd(n,m \mod n); \quad x \equiv y \pmod{b}; \quad x \equiv y \mod c; \quad x \equiv y(d)$$

$$\boldsymbol{\nabla}\cdot\boldsymbol{E}=\frac{\rho}{\varepsilon_0}$$

$$\boldsymbol{\nabla}\cdot\boldsymbol{B}=0$$

$$\boldsymbol{\nabla}\times\boldsymbol{E}=-\frac{\partial\boldsymbol{B}}{t}$$

$$\boldsymbol{\nabla}\times\boldsymbol{B}=\mu_0\boldsymbol{J}+\mu_0\varepsilon_0\frac{\partial\boldsymbol{E}}{\partial t}$$

$$\begin{aligned}\oiint_{\partial V}\boldsymbol{E}\cdot d\boldsymbol{A}&=\frac{Q(V)}{\varepsilon_0}\\\oiint_{\partial V}\boldsymbol{B}\cdot d\boldsymbol{A}&=0\\\oint_{\partial s}\boldsymbol{E}\cdot d\boldsymbol{I} &=-\frac{\partial\Phi_{B,S}}{\partial t}\\\oint_{\partial S}\boldsymbol{B}\cdot d\boldsymbol{I}&=\mu_0I_S+\mu_0\varepsilon_0\frac{\partial\Phi_{E,S}}{\partial t}\end{aligned}$$

$$\rho_0=\left(\begin{array}{cc}\cos\theta & \sin\theta\\-\sin\theta & \cos\theta\end{array}\right)=\left[\begin{array}{cc}\cos\theta & \sin\theta\\-\sin\theta & \cos\theta\end{array}\right]$$

$$\left[\begin{array}{c|ccc}1&0&\ldots&0\\\hline0&* &\ldots &*\\\vdots&\vdots&\ddots&\vdots\\0&* &\ldots &*\end{array}\right]=\boxed{\begin{array}{c|ccc}1&0&\ldots&0\\\hline0&* &\ldots &*\\\vdots&\vdots&\ddots&\vdots\\0&* &\ldots &*\end{array}}$$

$$\sigma=\sqrt{\frac{1}{N}\sum_{i=1}^Np_i(x_i-\bar{x})^2}=\sqrt{\frac{\sum_{i=1}^Np_i(x_i-\bar{x})^2}{N}}$$

$$\varphi(n)=n\cdot\prod_{\substack{p|n\\p\text{ prime}}}\left(1-\frac{1}{p}\right)$$

$${}^4_{12}C_2^{5+}\quad {}^{14}_2C_2^{5+}\quad {}^4_{12}C_2^{5+}\quad {}^{14}C_2^{5+}\quad 2C_2^{5+}$$

$$\mathbb{Q} \cong \left\{ \frac{a}{b} \mid a, b \in \mathbb{Z} \text{ and } b \neq 0 \right\}$$

$$\frac{a}{b} \sim \frac{c}{d} \iff ad - bc = 0$$