$$1_A = \begin{cases} 1 & \text{if} \quad x \in A \\ 0 & \text{if} \quad x \notin A \end{cases}$$

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

$$\begin{aligned} &1 \uparrow 1 = {}^{1}1 = 1 \\ &2 \uparrow\uparrow 2 = {}^{2}2 = 4 \\ &3 \uparrow\uparrow\uparrow 3 = {}^{^{3}3}3 = 3 \uparrow\uparrow 3 \uparrow\uparrow 3 = \underbrace{3^{3^{3^{3^{\cdot^{\cdot^{\cdot^{3}}}}}}}}_{3^{3^3} threes} \end{aligned}$$

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

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

$$\Gamma(n+1) \stackrel{\text{def}}{=} \int_{o}^{\infty} \exp^{-t} t^n dt$$

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

$$\begin{aligned} &\nabla \cdot \boldsymbol{E} = \frac{\rho}{\varepsilon_0} \\ &\nabla \cdot \boldsymbol{B} = 0 \\ &\nabla \times \boldsymbol{E} = -\frac{\partial \boldsymbol{B}}{t} \\ &\nabla \times \boldsymbol{B} = \mu_0 \boldsymbol{J} + \mu_0 \varepsilon_0 \frac{\partial \boldsymbol{E}}{\partial t} \end{aligned}$$

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

$$
\rho_0 = \begin{pmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{pmatrix} = \begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix}
$$

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

$$
\begin{aligned}
&\sigma = \sqrt{\frac{1}{N} \sum_{i=1}^{N} p_i (x_i - \bar{x})^2} = \sqrt{\frac{\sum_{i=1}^{N} p_i (x_i - \bar{x})^2}{N}} \\
&\varphi(n) = n \cdot \prod_{\substack{p|n \\ pprime}} \left(1 - \frac{1}{p}\right)
\end{aligned}
$$

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

$$\mathbb{Q} \cong \left\{ \ \tfrac{a}{b} | \, a, b \, \in \, \mathbb{Z} \, and \, b \neq 0 \ \right\}$$

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