

MTPro2 Math specimens

1 Three math sizes and compound expressions

Compare expressions in normal, superscript and nested superscript positions.

Inline example: $x^n + y^n = z^n$.

$$\sum_{i=1}^n \sin x + i^{\sin x} + i^{i^{\sin x}}$$

$$A, \ldots, Z \quad a, \ldots, z \quad \Gamma, \ldots, \Omega \quad \Gamma, \ldots, \Omega \quad \alpha, \ldots, \omega$$

$$2^{A, \ldots, Z} \quad a, \ldots, z \quad \Gamma, \ldots, \Omega \quad \Gamma, \ldots, \Omega \quad \alpha, \ldots, \omega$$

$$2^{2^{A, \ldots, Z} \quad a, \ldots, z \quad \Gamma, \ldots, \Omega \quad \Gamma, \ldots, \Omega \quad \alpha, \ldots, \omega}}$$

$$\mathfrak{N}_\alpha \times \mathfrak{N}_\beta = \beta \Leftrightarrow \alpha \leq \beta$$

$$2^{\mathfrak{N}_\alpha \times \mathfrak{N}_\beta = \beta \Leftrightarrow \alpha \leq \beta}$$

$$2^{2^{\mathfrak{N}_\alpha \times \mathfrak{N}_\beta = \beta \Leftrightarrow \alpha \leq \beta}}$$

$$\forall \varepsilon > \alpha, \Gamma_\alpha \hookrightarrow \Gamma_\varepsilon$$

$$2^{\forall \varepsilon > \alpha, \Gamma_\alpha \hookrightarrow \Gamma_\varepsilon}$$

$$2^{2^{\forall \varepsilon > \alpha, \Gamma_\alpha \hookrightarrow \Gamma_\varepsilon}}$$

$$|x-a|<\delta \Rightarrow |f(x)-l|<\varepsilon$$

$$2^{|x-a|<\delta \Rightarrow |f(x)-l|<\varepsilon}$$

$$2^{2^{|x-a|<\delta \Rightarrow |f(x)-l|<\varepsilon}}$$

$$\underbrace{V \times \cdots \times V}_k \times \underbrace{V \times \cdots \times V}_l \rightarrow \underbrace{V \times \cdots \times V}_{k+l}$$

$$2^{\underbrace{V \times \cdots \times V}_k \times \underbrace{V \times \cdots \times V}_l \rightarrow \underbrace{V \times \cdots \times V}_{k+l}}$$

$$2^{2^{\underbrace{V \times \cdots \times V}_k \times \underbrace{V \times \cdots \times V}_l \rightarrow \underbrace{V \times \cdots \times V}_{k+l}}}$$

$$\{x|x\neq x\}=\emptyset \qquad (A\cap B)^\circ\subset A^\circ\cap B^\circ$$

$$2^{\{x|x\neq x\}=\emptyset} \qquad (A\cap B)^\circ\subset A^\circ\cap B^\circ$$

$$2^{2^{\{x|x\neq x\}=\emptyset}} \qquad (A\cap B)^\circ\subset A^\circ\cap B^\circ$$

$$\omega=v+v(x,y)\,dx+w(x,y)\,dy+dx\kappa$$

$$\wr{\omega}{v}{v(x,y)}{dx}{w(x,y)}{dy}{dx}$$

$$\wr{2}{\omega}{v}{v(x,y)}{dx}{w(x,y)}{dy}{dx}$$

$$d\omega = dv + \left(\frac{\partial w}{\partial x} - \frac{\partial v}{\partial y}\right) dx \wedge dy$$

$$\wr{2}{d\omega}{dv}{\left(\frac{\partial w}{\partial x}-\frac{\partial v}{\partial y}\right)}{dx\wedge dy}$$

$$\wr{2^2}{d\omega}{dv}{\left(\frac{\partial w}{\partial x}-\frac{\partial v}{\partial y}\right)}{dx\wedge dy}$$

$$\hat{x}+\hat{X}+\widehat{xy}+\widehat{xyz}+\vec{A}$$

$$\wr{2}{\hat{x}+\hat{X}+\widehat{xy}+\widehat{xyz}+\vec{A}}$$

$$\wr{2^{\hat{x}+\hat{X}+\widehat{xy}+\widehat{xyz}+\vec{A}}}$$

$$R_{ijkl}=-R_{jikl}=-R_{ijlk}=R_{klij}$$

$$\wr{2}{R_{ijkl}=-R_{jikl}=-R_{ijlk}=R_{klij}}$$

$$\wr{2^2}{R_{ijkl}=-R_{jikl}=-R_{ijlk}=R_{klij}}$$

$$(f\circ g)'(x)=f'(g(x))\cdot g'(x)$$

$$\wr{2}{(f\circ g)'(x)=f'(g(x))\cdot g'(x)}$$

$$\wr{2^2}{(f\circ g)'(x)=f'(g(x))\cdot g'(x)}$$

$$f(x)=\begin{cases}|x| & x>a\\ -|x| & x\leq a\end{cases}$$

$$\wr{2}{f(x)=\begin{cases}|x| & x>a\\ -|x| & x\leq a\end{cases}}$$

$$\wr{2^2}{f(x)=\begin{cases}|x| & x>a\\ -|x| & x\leq a\end{cases}}$$

$$\int_{-\infty}^{\infty}e^{-x\cdot x}\,dx=\sqrt{\pi}$$

$$\wr{2}{\int_{-\infty}^{\infty}e^{-x\cdot x}\,dx=\sqrt{\pi}}$$

$$\wr{2^2}{\int_{-\infty}^{\infty}e^{-x\cdot x}\,dx=\sqrt{\pi}}$$

$$X=\sum_i \xi^i \frac{\partial}{\partial x^i} + \sum_j x^j \frac{\partial}{\partial \dot{x}^j}$$

$$\wr{2}{X=\sum_i \xi^i \frac{\partial}{\partial x^i} + \sum_j x^j \frac{\partial}{\partial \dot{x}^j}}$$

$$\wr{2^2}{X=\sum_i \xi^i \frac{\partial}{\partial x^i} + \sum_j x^j \frac{\partial}{\partial \dot{x}^j}}$$

2 Standard accents

Compare ordinary accents with wide accents over longer expressions.

$$\overset{\circ}{x}$$

$$\dot{I} + \ddot{I}$$

$$\hat{A}, \quad \hat{M}$$

$$\hat{A}, \quad \hat{M}, \quad \widehat{xy}, \quad \widehat{xyz}, \quad \widehat{xyzw}, \quad \widehat{x + y + z + \cdots + w}$$

$$\tilde{A}, \quad \tilde{M}$$

$$\tilde{A}, \quad \tilde{M}, \quad \widetilde{xy}, \quad \widetilde{xyz}, \quad \widetilde{xyzw}, \quad \widetilde{x + y + z + \cdots + w}$$

$$\check{A}, \quad \check{M}$$

$$\check{A}, \quad \check{M}, \quad \check{xy}, \quad \check{xyz}, \quad \check{xyzw}, \quad \check{x + y + z + \cdots + w}$$

$$\bar{M}, \quad \overline{M}, \quad \overline{x + y + z}$$

3 Math alphabets

Compare alphabet styles and letters in subscript and superscript positions.

$$A_{\mathbf{x}}(f) = \mathbf{X}(\mathbf{f}) = 2^{2^{\mathbf{X}(\mathbf{g})}}$$

ABGMXYZ
ABGMXYZ
ABGMXYZ
ABGMXYZ
ABGMXYZ
ABGMXYZ
 𝔸𝔹𝔾𝔻𝔦𝔱𝔷
𝔸𝔹𝔾𝔻𝔦𝔱𝔷
 A B G M X Y Z

4 Parentheses at four matrix sizes

$$\hat{j}_x^{(1/2)} = \frac{\hbar}{2} \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix} \quad \hat{j}_x^{(3/2)} = \frac{\hbar}{2} \begin{pmatrix} 0 & \sqrt{3} & 0 & 0 \\ \sqrt{3} & 0 & 2 & 0 \\ 0 & 2 & 0 & \sqrt{3} \\ 0 & 0 & \sqrt{3} & 0 \end{pmatrix}$$

$$\hat{j}_x^{(5/2)} = \frac{\hbar}{2} \begin{pmatrix} 0 & \sqrt{5} & 0 & 0 & 0 & 0 \\ \sqrt{5} & 0 & 2\sqrt{2} & 0 & 0 & 0 \\ 0 & 2\sqrt{2} & 0 & 3 & 0 & 0 \\ 0 & 0 & 3 & 0 & 2\sqrt{2} & 0 \\ 0 & 0 & 0 & 2\sqrt{2} & 0 & \sqrt{5} \\ 0 & 0 & 0 & 0 & \sqrt{5} & 0 \end{pmatrix}$$

$$\hat{j}_x^{(7/2)} = \frac{\hbar}{2} \begin{pmatrix} 0 & \sqrt{7} & 0 & 0 & 0 & 0 & 0 & 0 \\ \sqrt{7} & 0 & 2\sqrt{3} & 0 & 0 & 0 & 0 & 0 \\ 0 & 2\sqrt{3} & 0 & \sqrt{15} & 0 & 0 & 0 & 0 \\ 0 & 0 & \sqrt{15} & 0 & 4 & 0 & 0 & 0 \\ 0 & 0 & 0 & 4 & 0 & \sqrt{15} & 0 & 0 \\ 0 & 0 & 0 & 0 & \sqrt{15} & 0 & 2\sqrt{3} & 0 \\ 0 & 0 & 0 & 0 & 0 & 2\sqrt{3} & 0 & \sqrt{7} \\ 0 & 0 & 0 & 0 & 0 & 0 & \sqrt{7} & 0 \end{pmatrix}$$

5 Formulas from physics and mathematics

$$\begin{aligned}\frac{d}{dt} \frac{\partial L}{\partial \dot{q}_i} - \frac{\partial L}{\partial q_i} &= 0, & p_i &= \frac{\partial L}{\partial \dot{q}_i}, \\ \dot{q}_i &= \frac{\partial H}{\partial p_i}, & \dot{p}_i &= -\frac{\partial H}{\partial q_i}.\end{aligned}$$

$$\begin{cases} \nabla \cdot \mathbf{E} &= \frac{\rho}{\varepsilon_0}, \\ \nabla \cdot \mathbf{B} &= 0, \\ \nabla \times \mathbf{E} &= -\frac{\partial \mathbf{B}}{\partial t}, \\ \nabla \times \mathbf{B} &= \mu_0 \mathbf{j} + \mu_0 \varepsilon_0 \frac{\partial \mathbf{E}}{\partial t}. \end{cases}$$

$$i\hbar \frac{\partial \psi}{\partial t} = \hat{H} \psi = \left[-\frac{\hbar^2}{2m} \nabla^2 + V(\mathbf{r}, t) \right] \psi.$$

$$\hat{\rho} = \frac{e^{-\beta \hat{H}}}{Z}, \quad Z = \text{tr} \left(e^{-\beta \hat{H}} \right), \quad \beta = \frac{1}{k_B T}.$$

$$R_{\mu\nu} - \frac{1}{2} R g_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi G}{c^4} T_{\mu\nu}.$$

$$\begin{aligned}\rho \left(\frac{\partial \mathbf{u}}{\partial t} + (\mathbf{u} \cdot \nabla) \mathbf{u} \right) &= -\nabla p + \mu \nabla^2 \mathbf{u} + \rho \mathbf{f}, \\ \nabla \cdot \mathbf{u} &= 0.\end{aligned}$$

$$\begin{aligned}\sum_{n=1}^{\infty} \mathbb{P}(A_n) < \infty &\Rightarrow \mathbb{P}\left(\limsup_{n \rightarrow \infty} A_n\right) = \mathbb{P}\left(\bigcap_{m=1}^{\infty} \bigcup_{n=m}^{\infty} A_n\right) \\ &= 0.\end{aligned}$$

$$\sum_{k=0}^n (-1)^k \binom{n}{k}^2 = \begin{cases} (-1)^{n/2} \binom{n}{n/2}, & n \text{ even}, \\ 0, & n \text{ odd}. \end{cases}$$