

Kleis Render Gallery

Inner product $\langle \mathbf{u}, \mathbf{v} \rangle$

$$\langle u|v\rangle$$

Matrix 2x2

$$\begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$$

Matrix 3x3

$$\begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix}$$

Vector arrow

$$\vec{v}$$

Vector bold

$$\boldsymbol{v}$$

Einstein Field Equations (core)

$$G^{\mu\mu} + \Lambda g^{\mu\mu} = \kappa T^{\mu\mu}$$

Maxwell tensor from potential

$$F_{\mu}^{\mu} = \partial_{\mu} A_{\nu} - \partial_{\nu} A_{\mu}$$

Kaluza–Klein metric block

$$\begin{bmatrix} g_{\mu}^{\mu} + \Phi A_{\mu} A_{\nu} & \Phi A_{\mu} \\ \Phi A_{\nu} & \Phi \end{bmatrix}$$

Euler–Lagrange (single var)

$$\frac{\partial L}{\partial y} - \frac{d}{dx} \frac{\partial L}{\partial y'} = 0$$

Beltrami identity

$$L - y' \frac{\partial L}{\partial y'} = C$$

Hamilton–Jacobi (basic)

$$H(q, \frac{\partial S}{\partial q}, x) + \frac{\partial S}{\partial x} = 0$$

HJB (core shape)

$$\frac{\partial V}{\partial x} + \min_u \left\{ \frac{\partial V}{\partial x} \cdot F(x, u) + C(x, u) \right\} = 0$$

HJB (stochastic diffusion term)

$$\frac{\sigma^2}{2} \frac{\partial^2 V}{\partial x^2}$$

Riemann zeta (Dirichlet series)

$$\zeta(s) = \sum_{n=1}^{\infty} \frac{1}{n^s}$$

Riemann zeta (Euler product)

$$\zeta(s) = \prod_{p \text{ prime}} \frac{1}{1 - p^{-s}}$$

Riemann zeta (Mellin-type integral)

$$\zeta(s) = \frac{1}{\Gamma(s)} \int_0^{\infty} \frac{x^{s-1}}{\exp(x) - 1} dx$$

Limit

$$\lim_{x \rightarrow 0} f(x)$$

Limsup

$$\limsup_{x \rightarrow \infty} f(x)$$

Liminf

$$\liminf_{x \rightarrow a} f(x)$$

Ket vector (QM)

$$|\psi\rangle$$

Bra vector (QM)

$$\langle \phi |$$

Outer product (QM)

$$outer_product(\psi, \phi)$$

Commutation relation (canonical)

$$[\hat{x}, \hat{p}] = i \hbar$$

Set membership

$$x \in \mathbb{R}$$

Subset relation

$$A \subseteq B$$

Set union

$$A \cup B$$

Set intersection

$$A \cap B$$

Universal quantifier

$$\forall x: x \in S$$

Existential quantifier

$$\exists x: x \in S$$

Logical implication

$$P \Rightarrow Q$$

Double integral

$$\iint_D f(x, y) \, dx \, dy$$

Triple integral

$$\iiint_V f(x, y, z) \, dx \, dy \, dz$$

Commutator

$$[A, B]$$

Anticommutator

$$\{A, B\}$$

Square root

$$\sqrt{x}$$

Nth root (cube)

$$\sqrt[3]{x}$$

Gaussian integral result

$$\frac{\sqrt{\pi}}{2}$$

Energy constraint

$$E \geq 0$$

Inequality

$$x \leq y$$

Not equal

$$a \neq b$$

Approximation

$$\pi \approx 3.14159$$

Proportionality

$$F \propto ma$$

Complex conjugate

$$\bar{z}$$

Real part

$$\operatorname{Re}(z)$$

Imaginary part

$$\operatorname{Im}(z)$$

Hamiltonian operator

$$\hat{H}$$

Schrodinger equation

$$\hat{H}|\psi\rangle = E|\psi\rangle$$

Cosine

$$\cos(x)$$

Tangent

$$\tan(x)$$

Sine

$$\sin(x)$$

Hyperbolic sine

$$\sinh(x)$$

Hyperbolic cosine

$$\cosh(x)$$

Natural logarithm

$$\ln(x)$$

Logarithm

$$\log(x)$$

Euler formula

$$e^{i\theta} = \cos(\theta) + i \sin(\theta)$$

Trace (density matrix)

$$\text{Tr}(\rho) = 1$$

Matrix inverse

$$A^{-1}$$

Factorial

$$\prod_{i=1}^n i = n!$$

Floor function

$$\lfloor x \rfloor$$

Ceiling function

$$\lceil x \rceil$$

Arcsine

$$\arcsin(x)$$

Arccosine

$$\arccos(x)$$

Arctangent

$$\arctan(x)$$

Secant

$$\sec(x)$$

Cosecant

$$\csc(x)$$

Cotangent

$$\cot(x)$$

Pauli matrix (sigma x)

$$\sigma_x = \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$$

Pauli matrix (sigma z)

$$\sigma_z = \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$$

Identity matrix (pmatrix)

$$\begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

Binomial coefficient

$$\binom{n}{k}$$

Divergence

$$\nabla \cdot \mathbf{F}$$

Curl

$$\nabla \times \mathbf{B}$$

Laplacian

$$\nabla^2 \phi$$

Maxwell divergence law

$$\nabla \cdot \mathbf{E} = \frac{\rho}{\epsilon_0}$$

Wave equation

$$\nabla^2 \phi - \frac{\partial^2 \phi}{\partial t^2} = 0$$

Matrix with fractions

$$\begin{bmatrix} \frac{a}{b} & c \\ d & e \end{bmatrix}$$

Matrix with sqrt

$$\begin{bmatrix} \sqrt{2} & \sqrt{3} \\ \sqrt{5} & \sqrt{7} \end{bmatrix}$$

Rotation matrix

$$\begin{bmatrix} \cos(\theta) & -\sin(\theta) \\ \sin(\theta) & \cos(\theta) \end{bmatrix}$$

Normalized state (QM)

$$\begin{bmatrix} \frac{1}{\sqrt{2}} & 0 \\ 0 & \frac{1}{\sqrt{2}} \end{bmatrix}$$

Hilbert space membership

$$\psi \in L^2(\mathbb{C})$$

Absolute value (piecewise)

$$\begin{cases} x & x \geq 0 \\ -x & x < 0 \end{cases}$$

Sign function

$$\begin{cases} -1 & x < 0 \\ 0 & x = 0 \\ 1 & x > 0 \end{cases}$$

Text mode (simple)

hello world

Text mode (with spaces)

if

Text in piecewise

$$\begin{cases} x^2 & \text{if} \\ 0 & \text{otherwise} \end{cases}$$

Bar accent (average)

\bar{x}

Tilde accent

\tilde{x}

Overline (conjugate)

\overline{z}

Dot (velocity)

\dot{x}

Double dot (acceleration)

\ddot{x}

Newton's 2nd law

$$F = m \ddot{x}$$

Determinant (vmatrix 2x2)

$$\begin{vmatrix} a & b \\ c & d \end{vmatrix}$$

Determinant (vmatrix 3x3)

$$\begin{vmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{vmatrix}$$

Congruence modulo

$$a \equiv b \pmod{n}$$

Fermat little theorem

$$a^{p-1} \equiv 1 \pmod{p}$$

Variance

$$\text{Var}(X)$$

Covariance

$$\text{Cov}(X, Y)$$

Ellipsis: horizontal centered

$$\cdots$$

Ellipsis: horizontal lower

$$\cdots$$

Ellipsis: vertical

$$\vdots$$

Ellipsis: diagonal

$$\ddots$$

Sequence with ellipsis

$$1, 2, 3, \dots, n$$

Matrix with ellipsis

$$\begin{bmatrix} a_{11} & \cdots & a_{1n} \\ \vdots & \ddots & \vdots \\ a_{m1} & \cdots & a_{mn} \end{bmatrix}$$