Mathematical Conventions Survey

Everyone knows that 36 questions can lead to love. But can answering questions lead to hate? Research has shown that answering the following 100 questions with friends or potential lovers is a leading cause of murder among mathematicians in the United States. Terrence Tao credits the *100 questions* for "... singlehandedly prevent[ing] the resolution of the Riemann Hypothesis", in a post-cage fight interview. His former colleague was unavailable for comment. Try the *100 questions* today!

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All questions are optional. *You are encouraged to skip any question that you do not understand or otherwise cannot give an answer to for any reason.*

In Google anmelden, um den Fortschritt zu speichern. Weitere Informationen

1. The naturals start at

- (●) 0
- ( ) 1

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2. Settle the debate.

- (●) π
- ( ) τ

Auswahl löschen

3. 0 to the power 0 is

- ○ 1
- ○ indeterminate
- ○ undefined
- ○ 0
- ○ Sonstiges:

4. Manifolds are

- ○ second countable
- ○ not necessarily second countable

5. Euler's totient function is denoted

- ◉ φ
- ○ ϕ
- ○ Sonstiges:

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6. sqrt(-1) is

- ○ i, by definition
- ◉ i, but not by definition
- ○ not defined
- ○ Sonstiges:

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7. The empty set is

- ○ {}
- ◉ $\emptyset$
- ○ ϕ (that's a phi)
- ○ Sonstiges:

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8.

- ○ m+n
- ◉ n+m

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9.

- ◉ m/n
- ○ n/m

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10. The empty graph is

- ○ connected
- ○ not connected

11. The set of complex numbers is

- (●) \mathbb{C} i.e. $\mathbb{C}$
- ( ) \mathbf{C} i.e. $\mathbf{C}$
- ( ) Sonstiges:

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12.

- (●) Let V be a vector space.
- ( ) Let E be a vector space.
- ( ) Let V be a linear space.
- ( ) Let E be a linear space.

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13. f(x) = 3 is

- (●) increasing
- ( ) not increasing

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14. The inner product of v and w is

- (●) <v, w>
- ( ) v · w
- ( ) (v, w)
- ( ) Sonstiges:

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15. Fill in the blank: "E = {n ∈ ℤ ___ n is even}"

- (●) |
- ( ) :
- ( ) s.t.
- ( ) such that
- ( ) ∋
- ( ) Sonstiges:

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16. ⊂ means

- (●) strict subset
- ( ) not necessarily strict subset
- ( ) I don't use this notation

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17. The Laplace equation is

- (●) $\Delta u = 0$
- ( ) $-\Delta u = 0$

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18. The heat equation is

- ( ) $-\Delta u + \dot{u} = 0$
- (●) $-\Delta u + \partial_t u = 0$
- ( ) $-\Delta u + u_t = 0$

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19. Let ___ be a category.

- (●) C (C)
- ( ) $\mathbb{C}$ ($\mathbb{C}$)
- ( ) $\mathcal{C}$ ($\mathcal{C}$ or $\mathscr{C}$)
- ( ) Sonstiges:

Auswahl löschen

20. Numbers

- ( ) exist (or can exist)
- ( ) do not exist (or cannot exist)

21. The divergence of F is

- ( ) div F
- ( ) $\nabla \cdot F$

22. The curl of F is

- ( ) curl F
- ( ) $\nabla \times F$

23. The 5th octant is

- ○ (+, -, -)
- ○ (-, +, -)
- ○ (-, -, +)
- ○ (-, +, +)
- ○ (+, -, +)
- ○ (+, +, -)
- ○ (-, -, -)

24. $\mathbb{Z}_p$ is

- ◉ the integers mod p; the cyclic group of p elements
- ○ the ring of p-adic integers
- ○ the finite field of p elements
- ○ Sonstiges:

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25. Up is

- ○ along the y axis
- ○ along the z axis

26. The existence and uniqueness theorem for ODEs is

- ○ Cauchy–Lipschitz
- ○ Picard–Lindelöf
- ○ Cauchy–Lipschitz–Picard–Lindelöf
- ○ Picard
- ○ Sonstiges:

27. Choose how many mathematicians you want to upset.

- ◉ I accept the axiom of choice
- ○ I reject the axiom of choice, but accept the axiom of countable choice.
- ○ I reject the axiom of countable choice.

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28. The set of the first n positive integers is

- ◉ {1,2,3, ..., n}
- ○ {1,2,3, ⋯, n} (those should be centered dots ala \cdots)

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29. (Lowercase) epsilon is

- ◉ ε
- ○ ϵ

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30. My proof is done.

- ○ QED
- ○ Q.E.D.
- ◉ white box
- ○ black box
- ○ Sonstiges:

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31. Let R be a ring.

- ○ R is commutative
- ◉ R need not be commutative

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32. Let R be a ring.

- ◉ R is unital
- ○ R need not be unital

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33. The Fourier Transform of f is

$$\int_{-\infty}^{\infty} f(x)e^{-2i\pi kx}\,dx$$

Option 1

$$\frac{1}{\sqrt{2\pi}}\int_{-\infty}^{\infty} f(x)e^{ikx}\,dx$$

Option 2

$$\int_{-\infty}^{\infty} f(x)e^{-ikx}\,dx$$

Option 3

$$\frac{1}{2\pi}\int_{-\infty}^{\infty} f(x)e^{ikx}\,dx$$

Option 4

Sonstiges:

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34. The group of symmetries of a regular n-gon is

D_n (D_n)

D_{2n} (D_{2n})

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35. T is a linear map on a vector space V. x is an element of V. T applied to x is

- ○ T(x)
- ◉ Tx
- ○ <T, x>
- ○ Sonstiges:

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36. The order of operations is

- ○ PEMDAS
- ○ BODMAS (or similar)
- ◉ Sonstiges: No mnemonics, I just do it correctly

Auswahl löschen

37. The mnemonic for the signs of trig functions is

- ○ ASTC ("All Students Take Calculus", e.g.)
- ○ CAST

38. The second tetration of x is

- ○ ^{2}x
- ○ x↑↑2

39. The Lebesgue measure is

- ○ m
- ◉ λ
- ○ $\mathcal{L}$
- ○ μ
- ○ Sonstiges:

Auswahl löschen

40. The Fibonacci sequence is

- ◉ $F_0 = 1, F_1 = 1, F_2 = 2, \ldots$
- ○ $F_1 = 1, F_2 = 1, F_3 = 2, \ldots$

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41. The Jacobian matrix of a function f: $\mathbb{R}^n \to \mathbb{R}^m$

- ◉ has dimensions m x n
- ○ has dimensions n x m

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42. The Jacobian matrix of a function f: $\mathbb{R}^n \to \mathbb{R}^m$

- ◉ is Df
- ○ is Jf
- ○ is ∇f
- ○ Sonstiges:

Auswahl löschen

43. The inverse function of sine is

- (●) $\sin^{-1}(x)$
- ( ) arcsin(x)
- ( ) asin(x)
- ( ) Arcsin(x)
- ( ) Asin(x)

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44. a and x are elements of a group. The conjugation of x via a is

- (●) axa^{-1}
- ( ) $a^{-1}xa$

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45. What is a tensor?

- ( ) A multilinear map of type $V^m \times (V^*)^n \to \mathbb{R}$
- ( ) A multilinear map of type $V^m \times (V^*)^n \to V^s \times (V^*)^t$
- ( ) A smooth section of a vector bundle formed by objects of the first option's type
- ( ) A smooth section of a vector bundle formed by objects of the second option's type
- ( ) An element of a tensor product of vector spaces
- ( ) A multidimensional array
- (●) An object that transforms like a tensor
- ( ) Sonstiges:

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46. The base of log is

- ○ 10
- ○ e
- ◉ 2

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47. x=0 for f(x) = -x^2 is a/an

- ◉ global maximum
- ○ absolute maximum

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48. x=0 for f(x) = cos(x) is a

- ◉ local maximum
- ○ relative maximum

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49. Three times four is

- ○ 3×4
- ◉ 3 · 4
- ○ (3)(4)

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50. In the Sleeping Beauty problem, the probability that the coin came up heads is

- ○ 1/3
- ○ 1/2
- ○ Sonstiges:

51. The set of all real x satisfying 1 < x < 2 is

- ◉ (1, 2)
- ○]1, 2[

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52. x is an element of $\mathbb{R}^n$. The norm of x is

- ○ |x|
- ◉ ||x||

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53. The L^p space of functions on the open interval (0,1) is

- ○ $L^p(0,1)$
- ◉ $L^p((0,1))$
- ○ $L_p(0,1)$
- ○ $L_p((0,1))$
- ○ Sonstiges:

Auswahl löschen

54. Let M be a smooth manifold. For a vector bundle $E \to M$, we denote by $\Gamma(E)$ the set of smooth sections of E. TM denotes the tangent bundle.

A connection ∇ on M has type

- ○ $\nabla : TM \times \Gamma(TM) \to TM$
- ○ $\nabla : TM \times \Gamma(E) \to E$, where E need not be TM
- ○ $\nabla : \Gamma(TM) \times \Gamma(TM) \to \Gamma(TM)$
- ○ $\nabla : \Gamma(TM) \times \Gamma(E) \to \Gamma(E)$, where E need not be TM
- ○ Sonstiges:

55. Bounded and equicontinuous sequences of functions on a separable metric space admit a uniformly converging subsequence.

- ○ This is Arzelà–Ascoli.
- ○ This is Ascoli–Arzelà.

56. 3 and 5 are congruent modulo 2.

- ◉ $3 \equiv 5 \pmod 2$
- ○ $3 \equiv 5 \bmod 2$
- ○ Sonstiges:

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57. $f : X \to Y$

- ○ The range of f is Y.
- ◉ The range of f is f(X).

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58. $\log^2(x)$ is

- ○ The iterated log, log(log(x))
- ◉ log(x), squared

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59. A, B, C, and D are points in the real projective plane. The quantity (A, B; C, D) is a

- ○ cross ratio
- ○ double ratio

60. A straw has

- ◉ one hole
- ○ two holes

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61. The golden ratio is

- ◉ approximately 1.618
- ○ approximately 0.618

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62. The floor of x is

- ◉ $\lfloor x \rfloor$
- ○ [x]

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63. The set of limit points of {1} is

- ○ {}
- ◉ {1}

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64. f(x) = 3x is

- ○ one-to-one
- ◉ injective

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65. The three real numbers a, b, c are to be ordered without loss of generality.

- ◉ $a \leq b \leq c$
- ○ $a \geq b \geq c$

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66. The integral of the function x+1 over the interval (0,1) is

- ◉ $\int_0^1 x+1 \, dx$
- ○ $\int_0^1 (x+1) \, dx$

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67. A is a matrix over the field of complex numbers. The conjugate transpose of A is

- ○ A^H
- ○ A^*
- ◉ $A^\dagger$
- ○ Sonstiges:

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68. A smooth map $f: M \to N$ induces a smooth map $df(x)$ between the tangent space at x and the tangent space at $f(x)$.

- ○ df is called a pushforward.
- ○ df is called a differential.
- ○ df is called a derivative.
- ○ df is called a total derivative.
- ○ Sonstiges:

69. My proof has arrived at a contradiction.

- ○ ⊥
- ○ ※
- ○ ⁒
- ○ ⇒⇐
- ○ ↯
- ○ Opq
- ○ ⇹ (If displayed improperly: That's a slash in the middle of a double arrow)
- ○ I have no symbol for this.
- ◉ Sonstiges: "Something fucked up"

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70. The entire function $f(z) = e^z$ is

- ○ conformal (because the derivative never vanishes)
- ○ not conformal (because it is not injective)

71. The expected value of a random variable X is

- ○ $\mathbb{E}[X]$
- ○ $\mathbb{E}(X)$
- ○ $\mathbb{E}X$
- ◉ E[X]
- ○ E(X)
- ○ EX
- ○ Sonstiges:

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72. 1/x is

- (●) continuous
- ( ) not continuous

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73. The vector field F(x, y, z) = (yz, xz, xy) is

- (●) irrotational
- ( ) curl-free
- ( ) longitudinal
- ( ) curl-less

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74. The cardinality of a set S is

- (●) |S|
- ( ) #S
- ( ) card S
- ( ) Sonstiges:

Auswahl löschen

75. These questions are all about

- (●) math
- ( ) maths

Auswahl löschen

76. Endow $\mathbb{Q}$ with the usual metric. Let E be the subset of $\mathbb{Q}$ consisting of all rationals in (0, 1).

- ○ E is precompact because for any r > 0, it can be covered with finitely many balls of radius r.
- ○ E is not precompact because its closure is not compact.

77. The indicator function is notated via the character

- ○ $\mathbb{I}$
- ○ $\mathbb{1}$
- ○ 1
- ◉ χ
- ○ Sonstiges:

Auswahl löschen

78. The (preferred) shorthand for the sequence $a_1, a_2, a_3, \ldots$ is

- ○ $\{a_n\}_n$
- ◉ $(a_n)_n$
- ○ Sonstiges:

Auswahl löschen

79. The n-volume of the unit ball in n dimensions is

- ○ α_n
- ○ ω_n
- ○ Sonstiges:

80. When integrating, the d of dx should be

- (●) upright (like $\mathrm{d}x$)
- ( ) not upright (like dx)

Auswahl löschen

81. [n] is

- ( ) {1, 2, ..., n}
- ( ) {0, 1, ..., n-1}

82. A signed measure

- ( ) is real-valued
- (●) can take values of ±∞ (but not both)

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83. Brownian motion is

- ( ) continuous
- ( ) continuous almost surely

84. The complement of the set A is

- ( ) $\bar{A}$
- (●) A^c
- ( ) Sonstiges:

Auswahl löschen

85. The notation for the differential when integrating over a 2-dimensional surface embedded in Euclidean space is

- ○ dS
- ○ dA
- ○ dσ
- ○ dΣ
- ○ $d\mathcal{H}^2$
- ○ Sonstiges:

86. Partitions (of positive integers) are visually represented via

- ○ Young tableaux
- ○ Ferrers diagrams

87. The unit outward normal is

- ◉ n
- ○ v (that's a nu)
- ○ Sonstiges:

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88. The Yoneda embedding is

- ○ y
- ○ Y
- ○ $\mathcal{Y}$
- ○ よ
- ○ Sonstiges:

89. Your go-to dimension for a Euclidean space is

- (●) n
- ( ) N
- ( ) Sonstiges:

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90. Let m and n be relatively prime positive integers. I cannot procure exactly mn - m - n dollars using only m-dollar bills and n-dollar bills. But any larger integer quantity can be made.

- ( ) This is the Frobenius Coin theorem.
- (●) This is the Chicken McNugget theorem.

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91. The convolution of f and g is

- (●) $f * g$
- ( ) $f \star g$
- ( ) Sonstiges:

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92. LaTeX is pronounced

- ○ lay-teks
- ○ lay-tek
- ○ lah-teks
- ◉ lah-tek
- ○ luhtek
- ○ Sonstiges:

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93. X and Y are independent.

- ○ $X \perp Y$
- ○ $X \perp\!\!\!\perp Y$
- ○ Sonstiges:

94. The larger number among x and y is

- ◉ max(x, y)
- ○ max{x, y}
- ○ Sonstiges:

Auswahl löschen

95. The collection of morphisms from an object A to an object B is denoted

- ○ hom(A, B)
- ◉ Hom(A, B)
- ○ Mor(A, B)
- ○ Sonstiges:

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96. A and B are two distinct points in the Euclidean plane. The length of the segment that connects A and B is

- ○ AB
- ○ |AB|
- ◉ Sonstiges: |\vec{AB}|

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97. Let f(x, y) be a function in two variables. The function that sends y to f(x, y) for a fixed value of x is

- ◉ f(x, ·)
- ○ f(x, –)
- ○ Sonstiges:

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98. The function f(x) = 3x + 1 is

- ○ linear
- ◉ not linear

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99. The floor of exp(exp(exp(79)))

- (●) exists
- ( ) does not exist

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100. The value of 6÷2(1+2) is

- ( ) 1
- ( ) 9
- (●) fuck you

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Affiliation (Where did you find this survey?)
(And feel free to include any complaints about insufficient answer choices)

Meine Antwort

Senden

Alle Eingaben löschen

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