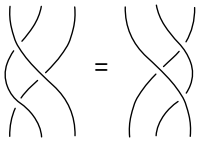
1. *Primes and the zeta function:*

$$\prod_p \frac{1}{1-\frac{1}{p^s}} = \sum_{n=1}^{\infty} \frac{1}{n^s}$$

3. *Yang-Baxter Equation*

$$R_{12}R_{23}R_{12} = R_{23}R_{12}R_{23}$$

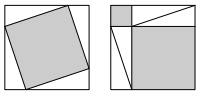


7. *Newton's Law of Gravitation:*

$$F = \frac{Gm_1m_2}{r^2}$$

8. *Pythagoras' Theorem with no-word proof:*

$$c^2 = a^2 + b^2$$



10? *Euler's Equation:*

$$e^{i\pi} + 1 = 0$$

11? *Schrödinger's Equation:*

$$i\hbar\frac{\partial\psi}{\partial t} = -\frac{\hbar^2}{2m}\nabla^2\psi + V\psi$$

12. *Maxwell's Equations in Vacuum:*

$$\begin{aligned} \nabla \cdot \mathbf{B} &= 0 & \nabla \cdot \mathbf{E} &= 0 \\ \nabla \times \mathbf{B} &= \frac{1}{c}\frac{\partial \mathbf{E}}{\partial t} & \nabla \times \mathbf{E} &= -\frac{1}{c}\frac{\partial \mathbf{B}}{\partial t} \end{aligned}$$

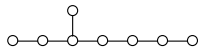
14. *Einstein's General Relativity Equation:*

$$R_{\mu\nu} - \frac{1}{2}Rg_{\mu\nu} = 8\pi T_{\mu\nu}$$

16. *Heisenberg Uncertainty Principle:*

$$\Delta x \Delta p \geq \frac{\hbar}{2}$$

17. *Dynkin diagram of E_8:*



22. *Stokes' Theorem*

$$\int_M d\omega = \int_{\partial M} \omega$$

24. *Atiyah-Singer Theorem for Twisted Dirac Operator:*

$$\dim \ker \not{D}_E - \dim \operatorname{coker} \not{D}_E = \int_{M^{4k}} \hat{A}(M) \cdot ch(E)$$

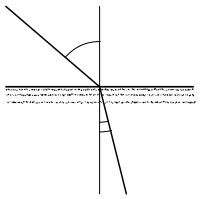
26. *Classical Gauss-Bonnet Theorem:*

$$\chi(M^2) = \frac{1}{2\pi}\int_M K \; dA$$

27. *Chern-Simons Action:*

$$S_{CS} = \frac{k}{2\pi}\int_M \operatorname{Tr}\left(\frac{1}{2}A \wedge dA + \frac{1}{3}A \wedge A \wedge A\right)$$

29. *Snell's (Pascal's) Law:*



$$\sin i = n \sin r$$

32. *Virasoro algebra:*

$$[L_m, L_n] = (m-n)L_{m+n} + \frac{c}{12}(m^3 - m)\delta_{m+n}$$

34. *Yang-Mills equations:*

$$F = dA + A \wedge A$$
$$\nabla \wedge \star F = 0$$

37. *Dirac Equation:*

$$\begin{aligned} (-i\hbar\gamma^\mu \nabla_\mu + mc)\,\psi &= 0 \\ \gamma^\mu\gamma^\nu + \gamma^\nu\gamma^\mu &= 2g^{\mu\nu} \end{aligned}$$

$$(i\,\partial\!\!\!/ - m)\,\psi = 0$$

$$(i\,\not{D} - m)\,\psi = 0$$

39. *Cauchy's Integral Formula:*

$$f(z) = \frac{1}{2\pi i} \oint_C \frac{f(\zeta)}{\zeta - z}\, d\zeta$$

41. *Graphic with Feynman diagrams and surfaces* [insert graphic]

42? *Navier-Stokes equation:*

$$\partial_t v_i + v_j \partial_j v_i = -\partial_i p + \nu \partial_j \partial_j v_i$$

43. *Kolmogorov Law:*

$$E(k) \sim \varepsilon^{2/3} k^{-5/3}$$

47. *The entropy formula:*

$$S = -\sum_i p_i \log p_i$$

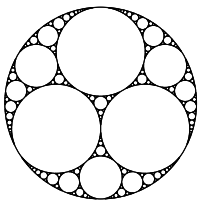
49. *Bott Periodicity:*

$$\pi_i(\mathrm{U}) = \pi_{i+2}(\mathrm{U})$$
$$\pi_i(\mathrm{O}) = \pi_{i+8}(\mathrm{O})$$
$$\mathbb{Z}_2, \mathbb{Z}_2, 0, \mathbb{Z}, 0, 0, 0, \mathbb{Z}$$

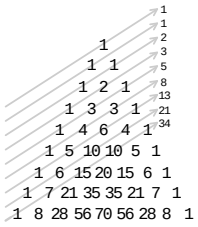
50. *Ricci flow:*

$$\frac{\partial g_t}{\partial t} = -2Ric(g_t)$$

51. *Apollonian fractal:*



53? *Pascal's triangle, Fibonacci numbers:*

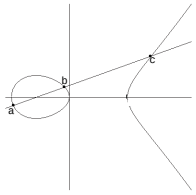


55. *Aharonov-Bohm Effect:*

$$\int_{C_2} \vec{A} \cdot d\vec{\ell} - \int_{C_1} \vec{A} \cdot d\vec{\ell} = \frac{1}{2\pi}\Phi$$

[insert figure]

56. *Group law on cubic:*

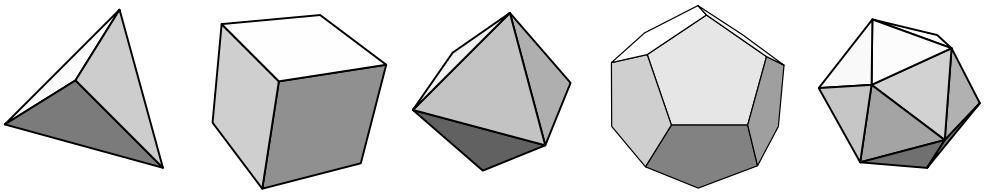


$$\mathsf{a} + \mathsf{b} + \mathsf{c} = 0$$

57? *Riemann-Roch-Hirzebruch:*

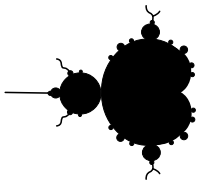
$$\sum_{k=0}^{n} (-1)^k \dim H^k(X, E) \quad = \quad \int_X ch\, E \cup Todd(X)$$

58. *Platonic solids, Euler characteristic:*

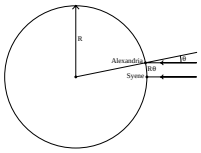


$$V - E + F = 2$$

61? *Mandelbrot Set:*



63. *Eratosthenes' measurement of radius of Earth:*



64? *Prime number Theorem:*

$$\pi(x) \sim \frac{x}{\ln x}$$

65. *Supergravity:*

$$\mathcal{L} = R - \bar{\psi}_\mu \gamma^{\mu\rho\sigma} D_\rho \psi_\sigma$$

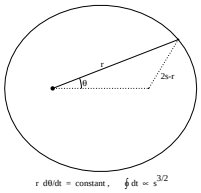
66. *Fourier transform:*

$$\hat{f}(\xi) = \int f(x) e^{2\pi i x \cdot \xi} dx \qquad\qquad f(x) = \int \hat{f}(\xi) e^{-2\pi i x \cdot \xi} d\xi$$

67. *Euler's summation for $\zeta(2)$:*

$$1 + \frac{1}{4} + \frac{1}{9} + \cdots = \frac{\pi^2}{6}$$

68. *Kepler's laws:*



70. *dd*

$$\partial \circ \partial = 0$$

[insert graphic? exploded tetrahedron?]

71. *Poincaré*

$$\pi_1 M^3 = 0 \quad \Rightarrow \quad M^3 \approx S^3$$

72. *Fermat*

$$x^n + y^n \neq z^n$$