

Tony:

Here are my comments (or votes). For many of the physics equations I put “no comment” since I don’t understand enough to say anything sensible. I put “Yes!” for the ones I felt most strongly about.

- 1 (primes). Yes (or should the equations be restricted to geometry and physics ?)
- 2 (sphere volume). No
3. Yes! (Note: This braid relation is due to Artin, 1925. As the defining equation for the fundamental group of a trefoil complement, it is due to Wirtinger 1905)
- 4 (reciprocity). Yes
- 5 (completing square). No
- 6 (F=ma). No
- 7 (gravity). Yes
- 8 (Pythagoras). Yes!
- 9 (hexagon). No
- 10 ( $e^{i\pi}$ ). No
11. Schrödinger). Yes
12. No. This seems too complicated to me. But Maxwell’s equations surely belong. Perhaps Einstein’s formulation also belongs:

$$F_{;\beta}^{\alpha\beta} = F_{\alpha\beta;\gamma} + F_{\beta\gamma;\alpha} + F_{\gamma\alpha;\beta} = 0$$

- 13 ( $E = mc^2$ ). maybe
14. Yes! But maybe the right side should be  $\frac{8\pi G}{c^4}T_{\mu\nu}$  ?
15. maybe at the end??
- 16 (Heisenberg). Yes!
- 17 (Dynkin). No
18. (H-C). No
- 19 (Fibonacci). Fibonacci belongs in some form; but this seems too crowded.
- 20 (Wilson). Not without a lot of explanation.
21. Maybe. But the figure should show a non-equilateral triangle with the angles marked. The ghost full great circles are not necessary. (I could try to make a figure if necessary.)
- 22 (Stokes). Yes
- 23 (genus 2). No
- 24 (twisted Dirac). maybe. But the ch should be in roman type, and I don’t like the cup symbol. Maybe just a space or  $\cdot$  or wedge symbol?

$$\dots = \int_{M^{4k}} \hat{A}(M^{4k}) \cdot \text{ch}(E)$$

- 25 (gen. G-B). Perhaps.
- 26 (G-B). Yes!
- 27 (C-S). Yes. But the CS should be in roman type. I don’t know what k is.
- 28 (Witten). no comment

- 29 (refraction). Maybe, if the figure were labeled.
- 30, 31, 32. no comment.
- 33 (Poincaré). No. (This is very misleading. The importance of Poincaré's paper is his discovery that celestial mechanics can be chaotic, so that the [planets] could conceivably "cross their prescribed limits" given enough time.)
- 34 (Y-M). Some form of this certainly belongs. Doesn't the equation  $F = dA + A \wedge A$  for the curvature of a connection deserve a line of its own?
- 35 (Y-M). no comment.
- 36 (Hodge). Yes. But perhaps the first equal sign should be a  $\cong$ . Would  $\delta$  in place of  $*d$  be more familiar?
- 37, 38. no comment
- 39 (Cauchy). Yes
- 40 (Hodge). No
- 41 (dilog). No. Would need too much explanation.
- 42 (N-S). Yes, if there is some explanation.
43. 44. no comment
- 45 (renorm.) no comment
- 46 ("no comment"). No, as is.
- 47(entropy) Yes (But without the  $k_B$  this could be described both as thermodynamic entropy and Shannon's information theoretic entropy)
- 48 (CKM). no comment
- 49 (exact sequence) No.
- 50 (Ricci flow) maybe
- 51 (App. fractal) maybe. What does it mean?
- 52 (gasket) No.
- 53 (Pascals, Fibonacci) No.
- 54 (heat kernel). no comment
- 55 (A-B). no comment
- 56 (cubic). Yes!
- 57 (R-R-H). maybe. I would write the right side as  $\int_X \text{ch}(E) \cdot \text{Todd}(X)$
- 58 (solids and  $\chi$ ). Not together.
- 59 (Lorenz). Yes
- 60 (BH entropy) no comment
- 61 (Mandelbrot) Yes if this resolution can be achieved
- 62 (sonnet) No.
- 63 (Eratosthenes...) Yes!
- 64 (prime number th.) Yes
- 65 (superG). no comment
- 66 (Fourier transform). Yes!
- 67 (Euler). Yes
- 68 (Kepler). Yes