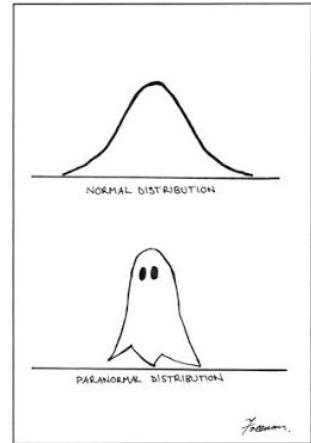
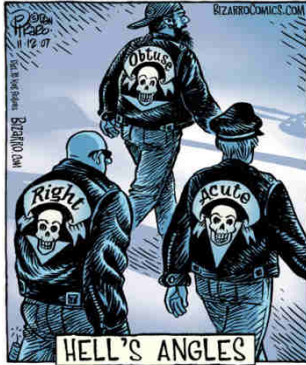
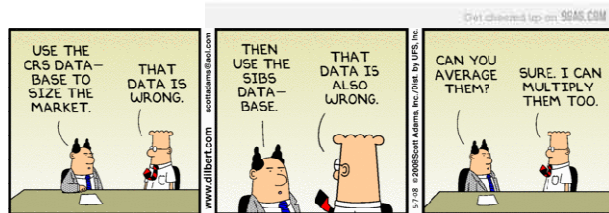
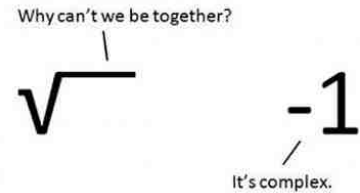
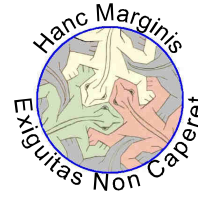


$$x^3 - 6.132x^2 + 12.533.024x - 8.538.098.688 = 0$$



It's called **reading**.
It's how people install new software into their brains.





1	F	(1803) Guglielmo Libri Carucci dalla Sommaja	RM132	
		(1878) Agner Krarup Erlang		
		(1894) Satyendranath Bose	RM168	
		(1912) Boris Gnedenko		
2	S	(1822) Rudolf Julius Emmanuel Clausius		
		(1905) Lev Genrichovich Shnirelman		
		(1938) Anatoly Samoilenko		
3	S	(1917) Yuri Alexeievich Mitropolsky		
1	4	M	(1643) Isaac Newton	RM071
	5	T	(1723) Nicole-Reine Etable de Labrière Lepaute (1838) Marie Ennemond Camille Jordan (1871) Federigo Enriques (1871) Gino Fano	RM084
6	W	(1807) Jozeph Mitza Petzval (1841) Rudolf Sturm		
7	T	(1871) Felix Edouard Justin Emile Borel (1907) Raymond Edward Alan Christopher Paley		
8	F	(1888) Richard Courant (1924) Paul Moritz Cohn (1942) Stephen William Hawking	RM156	
9	S	(1864) Vladimir Adreievich Steklov (1915) Mollie Orshansky		
10	S	(1875) Issai Schur (1905) Ruth Moufang		
	11	M	(1545) Guidobaldo del Monte (1707) Vincenzo Riccati (1734) Achille Pierre Dionis du Sejour	RM120
12	T	(1906) Kurt August Hirsch (1915) Herbert Ellis Robbins	RM156	
13	W	(1864) Wilhelm Karl Werner Otto Fritz Franz Wien (1876) Luther Pfahler Eisenhart (1876) Erhard Schmidt (1902) Karl Menger		
14	T	(1902) Alfred Tarski	RM096	
15	F	(1704) Johann Castillon (1717) Mattew Stewart (1850) Sofia Vasilievna Kovalevskaja	RM144	
	16	S	(1801) Thomas Klausen	
17	S	(1647) Catherina Elisabetha Koopman Hevelius (1847) Nikolay Egorovich Zukowsky (1858) Gabriel Koenigs		
	3	18	M	(1856) Luigi Bianchi (1880) Paul Ehrenfest
		19	T	(1813) Rudolf Friedrich Alfred Clebsch (1879) Guido Fubini (1908) Aleksandr Gennadievich Kurosh
20	W	(1775) André Marie Ampère (1895) Gabor Szegő (1904) Renato Caccioppoli	RM072	
	21	T	(1846) Pieter Hendrik Schoute (1915) Yuri Vladimirovich Linnik	
22	F	(1592) Pierre Gassendi (1886) John William Navin Sullivan (1908) Lev Davidovich Landau	RM063	
	23	S	(1840) Ernst Abbe (1862) David Hilbert	RM060
24	S	(1891) Abram Samoilovitch Besicovitch (1914) Vladimir Petrovich Potapov		
	4	25	M	(1627) Robert Boyle (1736) Joseph-Louis Lagrange (1843) Karl Hermann Amandus Schwarz
26		T	(1799) Benoît Paul Émile Clapeyron (1862) Eliakim Hastings Moore	
27		W	(1832) Charles Lutwidge Dodgson	RM108
28	T	(1701) Charles Marie de La Condamine (1888) Louis Joel Mordell (1892) Carlo Emilio Bonferroni		
	29	F	(1817) William Ferrel (1888) Sidney Chapman	
30	S	(1619) Michelangelo Ricci		
31	S	(1715) Giovanni Francesco Fagnano dei Toschi (1841) Samuel Loyd (1896) Sofia Alexandrovna Janovskaja (1945) Persi Warren Diaconis (1900) John Charles Burkill (1522) Lodovico Ferrari	RM192 RM180	

Putnam 2001, A1

Consider a set S and a binary operation $*$. Prove that, if $\forall a, b \in S (a*b)*a=b$, then $\forall a, b \in S a*(a*b)=b$.

Odd Logic Definitions

Poor: when you have too much month at the end of your money.

Calories: tiny creatures that live in your closet and sew your clothes a little bit tighter every night.

I confess, that after I began...to discern how useful mathematicks may be made to physicks, I have often wished that I had employed the speculative part of geometry, and the cultivation of the specious Algebra I had been taught very young, a good part of that time and industry, that I had spent about surveying and fortification (of which I remember I once wrote an entire treatise) and other parts of practick mathematicks.

Robert Boyle

"Then you should say what you mean", the March Hare went on.

"I do", Alice hastily replied; "at least I mean what I say, that's the same thing, you know."

"Not the same thing a bit!" said the Hatter. "Why, you might just as well say that "I see what I eat" is the same thing as "I eat what I see!".

Charles Lutwidge Dodgson

Die Energie der Welt ist konstant. Die Entropie der Welt strebt einem Maximum zu. (The energy of the world is constant. Its entropy tends to a maximum.)

Rudolf Julius Emmanuel Clausius

Before beginning I should put in three years of intensive study, and I haven't that much time to squander on a probable failure. [On why he didn't try to solve Fermat's last theorem].

David Hilbert

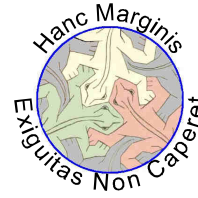
When everything in life seems petty, insignificant, I take refuge in the contemplation of the eternal and immutable laws of science.

Sofia Vasilievna Kovalevskaja

I would say this: mathematicians are like men who build houses. It is not only pleasant to live in the houses, they also allow their tenants to do many things that a cave dweller could never achieve. Mathematicians are like men who build, although they can not be sure that an earthquake will not destroy their buildings. If an earthquake were to destroy their work, new buildings will be built, and possibly more resistant. But men never decide to stop building homes, because even living in caves can't give an absolute guarantee of protection from the effects of an earthquake. Mathematicians seem to me to be in the same situation. Mathematics is not only a pleasure in itself, but is useful in many important applications. Its various buildings are not safe from the earthquake of contradiction. But for this reason men won't cease to improve them and build new ones.

Karl Menger

5	1	M	(1900) John Charles Burkill		
	2	T	(1522) Lodovico Ferrari (1893) Cornelius Lanczos (1897) Gertrude Blanch		
	3	W	(1893) Gaston Maurice Julia	RM073	
4	T	(1905) Eric Christopher Zeeman			
5	F	(1757) Jean Marie Constant Duhamel			
6	6	S	(1465) Scipione del Ferro (1612) Antoine Arnauld (1695) Nicolaus (II) Bernoulli	RM064 RM093	
	7	S	(1877) Godfried Harold Hardy (1883) Eric Temple Bell	RM049	
	8	M	(1700) Daniel Bernoulli (1875) Francis Ysidro Edgeworth (1928) Ennio de Giorgi	RM093 RM133	
9	T	(1775) Farkas Wolfgang Bolyai (1907) Harold Scott Macdonald Coxeter	RM097		
10	W	(1747) Aida Yasuaki (1932) Vivienne Malone-Mayes	RM121		
11	T	(1657) Bernard Le Bovier de Fontenelle (1800) William Henry Fox Talbot (1839) Josiah Willard Gibbs (1915) Richard Wesley Hamming			
	12	F	(1914) Hanna Caemmerer Neumann (1921) Kathleen Rita McNulty Mauchly Antonelli		
	13	S	(1805) Johann Peter Gustav Lejeune Dirichlet	RM145	
14	S	(1468) Johann Werner (1849) Hermann Hankel (1877) Edmund Georg Hermann Landau (1896) Edward Artur Milne (1932) Maurice Audin	RM063 RM194		
	7	15	M	(1564) Galileo Galilei (1850) Sophie Willock Bryant (1861) Alfred North Whitehead (1946) Douglas Hofstadter	RM085
	16	T	(1822) Francis Galton (1853) Gregorio Ricci-Curbastro (1903) Beniamino Segre		
17	W	(1890) Sir Ronald Aylmer Fisher (1891) Adolf Abraham Halevi Fraenkel (1905) Rózsa Péter			
18	T	(1404) Leon Battista Alberti (1919) Clifford Truesdell	RM157		
19	F	(1473) Nicolaus Copernicus	RM181		
20	S	(1844) Ludwig Boltzmann	RM061		
21	S	(1591) Girard Desargues (1915) Evgeny Michailovich Lifshitz			
	8	22	M	(1857) Heinrich Rudolf Hertz (1903) Frank Plumpton Ramsey	
	23	T	(1583) Jean-Baptiste Morin (1922) Anneli Cahn Lax (1951) Shigefumi Mori (1561) Henry Briggs	RM169	
24	W	(1871) Felix Bernstein			
25	T	(1827) Henry Watson			
26	F	(1786) Dominique Francois Jean Arago	RM193		
27	S	(1881) Luitzen Egbertus Jan Brouwer			
28	S	(1735) Alexandre Theophile Vandermonde			
9	29	M	(1860) Herman Hollerith	RM109	



Putnam 2001, A2

You have coins C_1, C_2, \dots, C_n . For each k , C_k is biased so that, when tossed, it has probability $1/(2k+1)$ of falling heads. If the n coins are tossed, what is the probability that the number of heads is odd? Express the answer as a rational function of n .

Odd Logic Definitions

Study: the art of texting, eating and watching TV with an open textbook nearby.

Synonym: a world used in place of the one you can't spell.

Euler calculated without apparent effort, as men breathe, or as eagles sustain themselves in the wind.

Dominique Francois Jean Arago

Guided only by their feeling for symmetry, simplicity, and generality, and an indefinable sense of the fitness of things, creative mathematicians now, as in the past, are inspired by the art of mathematics rather than by any prospect of ultimate usefulness.

Eric Temple Bell

[To son János urging him to give up work on non-Euclidian geometry:] *For God's sake, please give it up. Fear it no less than the sensual passion, because it, too, may take up all your time and deprive you of your health, peace of mind and happiness in life.*

Farkas Wolfgang Bolyai

A work of morality, politics, criticism will be more elegant, other things being equal, if it is shaped by the hand of geometry.

Bernard Le Bovier De Fontenelle

I know of scarcely anything so apt to impress the imagination as the wonderful form of cosmic order expressed by the "Law of Frequency of Error." The law would have been personified by the Greeks and deified, if they had known of it. It reigns with serenity and in complete self-effacement, amidst the wildest confusion. The huger the mob, and the greater the apparent anarchy, the more perfect is its sway. It is the supreme law of Unreason. Whenever a large sample of chaotic elements are taken in hand and marshaled in the order of their magnitude, an unsuspected and most beautiful form of regularity proves to have been latent all along.

Francis Galton

It is better to do the right problem the wrong way than the wrong problem the right way.

Richard Wesley Hamming

The science of pure mathematics ... may claim to be the most original creation of the human spirit.

Alfred North Whitehead



March

1	T	(1611) John Pell (1879) Robert Daniel Carmichael		
2	W	(1836) Julius Weingarten		
3	T	(1838) George William Hill (1845) Georg Cantor (1916) Paul Richard Halmos	RM062	
4	F	(1822) Jules Antoine Lissajous		
5	S	(1512) Gerardus Mercator (1759) Benjamin Gompertz (1817) Angelo Genocchi (1885) Pauline Sperry (1915) Laurent Schwartz (1931) Vera Pless	RM194	
6	S	(1866) Ettore Bortolotti		
10	7	M	(1792) William Herschel (1824) Delfino Codazzi (1922) Olga Alexandrovna Ladyzhenskaya	RM146
8	T	(1851) George Chrystal		
9	W	(1818) Ferdinand Joachimsthal (1900) Howard Hathaway Aiken		
10	T	(1864) William Fogg Osgood (1872) Mary Ann Elizabeth Stephansen		
11	F	(1811) Urbain Jean Joseph Le Verrier (1853) Salvatore Pincherle (1870) Louis Bachelier	RM158	
12	S	(1685) George Berkeley (1824) Gustav Robert Kirchhoff (1859) Ernesto Cesaro		
13	S	(1861) Jules Joseph Drach (1957) Rudy D'Alembert		
11	14	M	(1864) Jozef Kurschak (1879) Albert Einstein (1904) Lyudmila Vsevolodovna Keldysh	RM074
15	T	(1860) Walter Frank Raphael Weldon (1868) Grace Chisolm Young		
16	W	(1750) Caroline Herschel (1789) Georg Simon Ohm (1846) Magnus Gosta Mittag-Leffler	RM146	
17	T	(1876) Ernest Benjamin Esclangon (1897) Charles Fox		
18	F	(1640) Philippe de La Hire (1690) Christian Goldbach (1796) Jacob Steiner (1870) Agnes Sime Baxter	RM122	
19	S	(1862) Adolf Kneser (1910) Jacob Wolfowitz		
20	S	(1840) Franz Mertens (1884) Philip Franck (1938) Sergi Petrovich Novikov		
12	21	M	(1768) Jean Baptiste Joseph Fourier (1884) George David Birkhoff	
22	T	(1891) Lorna Mary Swain (1917) Irving Kaplansky (1944) Margaret Hilary Ashworth Millington		
23	W	(1754) Georg Freiherr von Vega (1882) Emmy Amalie Noether (1897) John Lighton Synge	RM050	
24	T	(1809) Joseph Liouville (1948) Sun-Yung (Alice) Chang (1966) Gigliola Staffilani	RM142	
25	F	(1538) Christopher Clausius		
26	S	(1848) Konstantin Andreev (1913) Paul Erdős	RM110	
27	S	(1857) Karl Pearson		
13	28	M	(1749) Pierre-Simon de Laplace (1928) Alexander Grothendieck	RM086
29	T	(1825) Francesco Faà Di Bruno (1873) Tullio Levi-Civita (1896) Wilhelm Ackerman	RM170 RM098	
30	W	(1892) Stefan Banach (1921) Alfréd Rényi	RM134	
31	T	(1596) René Descartes		

Putnam 2001, A3

For each integer m , consider the polynomial $P_m(x) = x^4 - (2m+4)x^2 + (m-2)^2$. For what values of m is $P_m(x)$ the product of two non-constant polynomials with integer coefficients?

Odd Logic Definitions

Feet: a device used for finding Legos in the dark.

School reunion: a meeting where it takes 20 seconds to realize why you haven't seen those people for 20 years.

The Bistromathic Drive is a wonderful new method of crossing vast interstellar distances without all the dangerous mucking about with *Improbability Factors*. *Bistromathics* itself is simply a revolutionary new way of understanding the behaviour of numbers. Just as Einstein observed that time was not an absolute but depended on the observer's movement in space, and that space was not an absolute, but depended on the observer's movement in time, it is now realised that numbers are not absolute, but depended on the observer's movement in restaurants.

Douglas Adams

Each concept that is definitely and completely determined by means of a finite number of clarifications, for example assigning a finite number of elements, it is a mathematical concept. Mathematics has as its function to develop the consequences implicit in the definition of a group of mathematical concepts.

George Chrystal

I concluded that I might take as a general rule the principle that all things which we very clearly and obviously conceive are true: only observing, however, that there is some difficulty in rightly determining the objects which we distinctly conceive.

René Descartes

How can it be that mathematics, being after all a product of human thought independent of experience, is so admirably adapted to the objects of reality?

Albert Einstein

The mathematician peeks behind God's shoulder to convey the beauty of His creation to the rest of His creatures.

Paul Erdős

Mathematics is not a deductive science -- that's a cliché. When you try to prove a theorem, you don't just list the hypotheses, and then start to reason. What you do is trial and error, experimentation, guesswork.

Paul Richard Halmos

What we know is not much. What we do not know is immense. [Allegedly his last words]

Pierre-Simon De Laplace



1	F	(1640) Georg Mohr (1776) Marie-Sophie Germain (1895) Alexander Craig Aitken		
2	S	(1878) Edward Kasner (1934) Paul Joseph Cohen		
3	S	(1835) John Howard Van Amringe (1892) Hans Rademacher (1900) Albert Edward Ingham (1909) Stanislaw Marcin Ulam (1971) Alice Riddle	RM171	
14	4	M	(1809) Benjamin Peirce (1842) Francois Edouard Anatole Lucas (1949) Shing-Tung Yau	RM123
5	T	(1588) Thomas Hobbes (1607) Honoré Fabri (1622) Vincenzo Viviani (1869) Sergi Alexeievich Chaplygin		
6	W	(1801) William Hallowes Miller		
7	T	(1768) François-Joseph Français		
8	F	(1903) Marshall Harvey Stone		
9	S	(1791) George Peacock (1816) Charles Eugene Delaunay (1894) Cypra Cecilia Krieger Dunaij (1919) John Presper Heckert		
10	S	(1857) Henry Ernest Dudeney	RM183	
15	11	M	(1953) Andrew John Wiles	
12	T	(1794) Germinal Pierre Dandelin (1852) Carl Louis Ferdinand von Lindemann (1903) Jan Tinbergen		
13	W	(1728) Paolo Frisi (1813) Duncan Farquharson Gregory (1869) Ada Isabel Maddison (1879) Francesco Severi		
14	T	(1629) Christiaan Huygens	RM135	
15	F	(1452) Leonardo da Vinci (1548) Pietro Antonio Cataldi (1707) Leonhard Euler (1809) Herman Gunther Grassmann	RM051	
16	S	(1682) John Hadley (1823) Ferdinand Gotthold Max Eisenstein		
17	S	(1798) Etienne Bobillier (1853) Arthur Moritz Schonflies (1863) Augustus Edward Hough Love		
16	18	M	(1791) Ottaviano Fabrizio Mossotti (1907) Lars Valerian Ahlfors (1918) Hsien Chung Wang (1949) Charles Louis Fefferman	RM150
19	T	(1880) Evgeny Evgenievich Slutsky (1883) Richard von Mises (1901) Kiyoshi Oka (1905) Charles Ehresmann		
20	W	(1839) Francesco Siacchi		
21	T	(1652) Michel Rolle (1774) Jean Baptiste Biot (1875) Teiji Takagi		
22	F	(1811) Otto Ludwig Hesse (1887) Harald August Bohr (1935) Bhama Srinivasan (1939) Sir Michael Francis Atiyah	RM063	
23	S	(1858) Max Karl Ernst Ludwig Planck (1910) Sheila Scott Macintyre		
24	S	(1863) Giovanni Vailati (1899) Oscar Zariski	RM099	
17	25	M	(1849) Felix Christian Klein (1900) Wolfgang Pauli (1903) Andrei Nicolayevich Kolmogorov	RM159
26	T	(1889) Ludwig Josef Johan Wittgenstein		
27	W	(1755) Marc-Antoine Parseval des Chenes (1932) Gian-Carlo Rota	RM195	
28	T	(1906) Kurt Godel	RM087	
29	F	(1854) Jules Henri Poincaré	RM075	
30	S	(1777) Johann Carl Friedrich Gauss (1916) Claude Elwood Shannon	RM147 RM111	

Putnam 2001, A4

Triangle ABC has an area 1. Points E, F, G lie, respectively, on sides BC, CA, AB such that AE bisects BF at point R, BF bisects CG at point S, and CG bisects AE at point T. Find the area of the triangle RST.

Odd Logic Definitions

Teacher: a person who helps you solve problems you'd never have without them.

Laziness: risking to drop everything you carry rather than walking twice.

To those who ask what the infinitely small quantity in mathematics is, we answer that it is actually zero. Hence there are not so many mysteries hidden in this concept as they are usually believed to be.

Leonhard Euler

I confess that Fermat's Theorem as an isolated proposition has very little interest for me, because I could easily lay down a multitude of such propositions, which one could neither prove nor dispose of. [A reply to Olbers' attempt in 1816 to entice him to work on Fermat's Theorem.]

Johann Carl Friedrich Gauss

The errors of definitions multiply themselves according as the reckoning proceeds; and lead men into absurdities, which at last they see but cannot avoid, without reckoning anew from the beginning.

Thomas Hobbes

Everyone who understands the subject will agree that even the basis on which the scientific explanation of nature rests is intelligible only to those who have learned at least the elements of the differential and integral calculus, as well as analytical geometry.

Felix Christian Klein

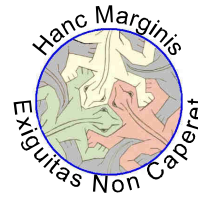
The man who blames the supreme certainty of mathematics feeds on confusion, and can never silence the contradictions of sophistical sciences which lead to an eternal quackery.

Leonardo Da Vinci

Thus, be it understood, to demonstrate a theorem, it is neither necessary nor even advantageous to know what it means. The geometer might be replaced by the "logic piano" imagined by Stanley Jevons; or, if you choose, a machine might be imagined where the assumptions were put in at one end, while the theorems came out at the other, like the legendary Chicago machine where the pigs go in alive and come out transformed into hams and sausages. No more than these machines need the mathematician know what he does.

Jules Henri Poincaré

1	S	(1825) Johann Jacob Balmer (1908) Morris Kline (1977) Maryam Mirzakhani	RM122 RM189	
18	2	M	(1860) D'Arcy Wentworth Thompson (1905) Kazimierz Zarankiewicz	RM138
	3	T	(1842) Otto Stolz (1860) Vito Volterra (1892) George Paget Thomson	RM136 RM161
	4	W	(1845) William Kingdon Clifford	
	5	T	(1833) Lazarus Emmanuel Fuchs (1883) Anna Johnson Pell Wheeler (1889) René Eugène Gateaux (1897) Francesco Giacomo Tricomi (1923) Cathleen Synge Morawetz	RM196
	6	F	(1872) Willem de Sitter (1906) André Weil	RM088
	7	S	(1854) Giuseppe Veronese (1881) Ebenezer Cunningham (1896) Pavel Sergieievich Alexandrov (1926) Alexis Claude Clairaut	
	8	S	(1859) Johan Ludwig William Valdemar Jensen (1905) Winifred Lydia Caunden Sargent	
19	9	M	(1746) Gaspard Monge (1876) Gilbert Ames Bliss (1965) Karen Ellen Smith	
	10	T	(1788) Augustin Jean Fresnel (1847) William Karl Joseph Killing (1904) Edward James Mcshane (1958) Piotr Rezierovich Silverbrahms	
	11	W	(1902) Edna Ernestine Kramer Lassar (1918) Richard Phillips Feynman	RM076
	12	T	(1820) Florence Nightingale (1845) Pierre René Jean Baptiste Henry Brocard (1902) Frank Yates	RM104
	13	F	(1750) Lorenzo Mascheroni (1899) Pelageia Yakovlevna Polubarinova Kochina	
	14	S	(1832) Rudolf Otto Sigismund Lipschitz (1863) John Charles Fields	RM100
	15	S	(1939) Brian Hartley (1964) Sijue Wu	
20	16	M	(1718) Maria Gaetana Agnesi (1821) Pafnuti Lvovi Chebyshev (1911) John (Jack) Todd	RM112 RM139
	17	T	(1940) Alan Kay	
	18	W	(1850) Oliver Heaviside (1892) Bertrand Arthur William Russell	RM160 RM052
	19	T	(1865) Flora Philip (1919) Georgii Dimitrievich Suvorov	
	20	F	(1861) Henry Seely White	
	21	S	(1471) Albrecht Dürer (1792) Gustave Gaspard de Coriolis	RM124
	22	S	(1865) Alfred Cardew Dixon	
21	23	M	(1914) Lipa Bers	RM148
	24	T	(1544) William Gilbert	
	25	W	(1838) Karl Mikailovich Peterson	
	26	T	(1667) Abraham de Moivre (1896) Yuri Dimitrievich Sokolov	
	27	F	(1862) John Edward Campbell	
	28	S	(1676) Jacopo Francesco Riccati (1710) Johann (II) Bernoulli	RM093
	29	S	(1882) Harry Bateman	
22	30	M	(1814) Eugene Charles Catalan	RM184
	31	T	(1926) John Kemeny	



Putnam 2001, A5

Prove that there are unique positive integers a, n such that $a^{n+1} - (a+1)^n = 2001$.

Odd Logic Definitions

Single: a man who makes jokes about women in the kitchen

Vegetarian: Latin phrase, originally meaning “really bad hunter”.

Now the sole reason why painters of this sort are not aware of their own error is that they have not learnt Geometry, without which no one can either be or become an absolute artist; but the blame for this should be laid upon their masters, who are themselves ignorant of this art.

Albrecht Dürer

Now one may ask, “What is mathematics doing in a physics lecture?” We have several possible excuses: first, of course, mathematics is an important tool, but that would only excuse us for giving the formula in two minutes. On the other hand, in theoretical physics we discover that all our laws can be written in mathematical form; and that this has a certain simplicity and beauty about it. So, ultimately, in order to understand nature it may be necessary to have a deeper understanding of mathematical relationships. But the real reason is that the subject is enjoyable, and although we humans cut nature up in different ways, and we have different courses in different departments, such compartmentalization is really artificial, and we should take our intellectual pleasures where we find them.

Richard Phillips Feynman

In brief, the whole world is the totality of mathematically expressible motions of objects in space and time, and the entire universe is a great, harmonious, and mathematically designed machine.

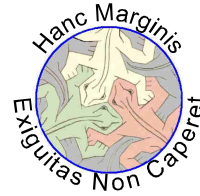
Morris Kline

[About her] Her statistics were more than a study, they were indeed her religion... Florence Nightingale believed — and in all the actions of her life acted upon that belief — that the administrator could only be successful if he were guided by statistical knowledge. The legislator — to say nothing of the politician — too often failed for want of this knowledge. Nay, she went further; she held that the universe — including human communities — was evolving in accordance with a divine plan; that it was man’s business to endeavor to understand this plan and guide his actions in sympathy with it. But to understand God’s thoughts, she held we must study statistics, for these are the measure of His purpose. Thus the study of statistics was for her a religious duty.

Florence Nightingale

If I were a medical man, I should prescribe a holiday to any patient who considered his work important.

Bertrand Arthur William Russell



1	W	(1796) Sadi Leonard Nicolas Carnot (1851) Edward Bailey Elliott (1899) Edward Charles Titchmarsh		
2	T	(1895) Tibor Radó		
3	F	(1659) David Gregory		
4	S	(1809) John Henry Pratt (1966) Svetlana Yakovlevna Jitomirskaya	RM197	
5	S	(1814) Pierre Laurent Wantzel (1819) John Couch Adams (1883) John Maynard Keynes	RM065	
23	6	M	(1436) Johann Muller Regiomontanus (1857) Aleksandr Michailovitch Lyapunov (1906) Max Zorn	RM185 RM077
	7	T	(1863) Edward Burr Van Vleck	
	8	W	(1625) Giovanni Domenico Cassini (1858) Charlotte Angus Scott (1860) Alicia Boole Stott (1896) Eleanor Pairman (1923) Gloria Olive (1924) Samuel Karlin	
	9	T	(1885) John Edensor Littlewood	RM049
	10	F	(940) Mohammad Abu'L Wafa Al-Buzjani (1887) Vladimir Ivanovich Smirnov	RM101
	11	S	(1881) Hilda Phoebe Hudson (1937) David Bryant Mumford	
	12	S	(1888) Zygmunt Janyszewski (1937) Vladimir Igorevich Arnold	
24	13	M	(1831) James Clerk Maxwell (1872) Jessie Chrystal Macmillan (1876) William Sealey Gosset (Student) (1928) John Forbes Nash	RM113 RM149
	14	T	(1736) Charles Augustin de Coulomb (1856) Andrei Andreyevich Markov (1903) Alonzo Church	RM125
	15	W	(1640) Bernard Lamy (1894) Nikolai Gregorievich Chebotaryov	
	16	T	(1915) John Wilder Tukey	
	17	F	(1898) Maurits Cornelius Escher	RM097
	18	S	(1858) Andrew Russell Forsyth (1884) Charles Ernest Weatherburn (1884) Frieda Nugel (1913) Paul Teichmueller (1915) Alice Turner Schafer	RM148
	19	S	(1623) Blaise Pascal (1902) Wallace John Eckert	RM053
25	20	M	(1873) Alfred Loewy (1917) Helena Rasiowa	
	21	T	(1781) Simeon Denis Poisson (1828) Giuseppe Bruno (1870) Maria Skłodowska Curie	RM182
	22	W	(1822) Mario Pieri (1864) Hermann Minkowsky (1910) Konrad Zuse (1932) Mary Wynne Warner	
	23	T	(1912) Alan Mathison Turing	RM089
	24	F	(1880) Oswald Veblen	
	25	S	(1908) William Van Orman Quine	
	26	S	(1823) William Thomson, Lord Kelvin (1918) Yudell Leo Luke	RM161
26	27	M	(1806) Augustus de Morgan	
	28	T	(1875) Henri Leon Lebesgue	RM173
	29	W	(1888) Aleksandr Aleksandrovich Friedmann (1979) Artur Avila Cordeiro de Melo	RM101 RM189
	30	T	(1791) Felix Savart (1958) Abigail A Thompson	

Putnam 2001, A6

Can an arc of a parabola inside a circle of radius 1 have a length greater than 4?

Odd Logic Definitions

Group project: time when you relax and watch someone who cares do all the work.

Writer: someone who puts everything he thinks on a paper, and throws the paper into trash bin.

The moving power of mathematical invention is not reasoning but imagination.

Augustus De Morgan

The mathematician is still regarded as the hermit who knows little of the ways of life outside his cell, who spends his time compounding incredible and incomprehensible theorems in a strange, clipped unintelligible jargon.

E. Kasner, J.R. Newman

Heavier-than-air flying machines are impossible. [Speaking in 1895]

I have not the smallest molecule of faith in aerial navigation other than ballooning, or of the expectation of good results from any of the trials we hear of. [Letter to Baden-Powell (1896)]

Radio has no future. [Speaking in 1897].

William Thomson, Lord Kelvin

[Newton's] peculiar gift was the power of holding continuously in his mind a purely mental problem until he had seen through it. Like all his type, Newton was wholly aloof from women.

John Maynard Keynes

In my opinion, a mathematician, in so far as he is a mathematician, need not preoccupy himself with philosophy – an opinion, moreover, which has been expressed by many philosophers.

Henri Leon Lebesgue

Improbabilities are apt to be overestimated. It is true that I should have been surprised in the past to learn that Professor Hardy had joined the Oxford Group. But one could not say the adverse chance was $10^6 : 1$. Mathematics is a dangerous profession; an appreciable proportion of us go mad, and then this particular event would be quite likely.

John Edensor Littlewood

Henceforth space by itself, and time by itself, are doomed to fade away into mere shadows, and only a kind of union of the two will preserve an independent reality.

Hermann Minkowsky



1	F	(1643) Gottfried Wilhelm von Leibniz (1788) Jean Victor Poncelet (1906) Jean Alexandre Eugène Dieudonné	RM054	
2	S	(1820) William John Rankine (1852) William Burnside (1925) Olga Arsen'evna Oleinik		
3	S	(1807) Ernest Jean Philippe Fauque de Jonquiere (1897) Jesse Douglas	RM162	
27	4	M	(1906) Daniel Edwin Rutherford (1917) Michail Samoilovich Livsic	
	5	T	(1936) James Mirrlees	
	6	W	(1849) Alfred Bray Kempe	
	7	T	(1816) Johann Rudolf Wolf (1906) William Feller (1922) Vladimir Aleksandrovich Marchenko	
	8	F	(1760) Christian Kramp (1904) Henri Paul Cartan	RM126
	9	S	(1845) George Howard Darwin (1931) Valentina Mikhailovna Borok	RM138 RM197
	10	S	(1856) Nikola Tesla (1862) Roger Cotes (1868) Oliver Dimon Kellogg	RM174
28	11	M	(1857) Sir Joseph Larmor (1888) Jacob David Tamarkin (1890) Giacomo Albanese	RM101
	12	T	(1875) Ernest Sigismund Fischer (1895) Richard Buckminster Fuller (1935) Nicolas Bourbaki	RM066 RM126
	13	W	(1527) John Dee (1741) Karl Friedrich Hindenburg	
	14	T	(1671) Jacques D'Allonville (1793) George Green	RM078
	15	F	(1865) Wilhelm Wirtinger (1898) Mary Taylor Slow (1906) Adolph Andrej Pavlovich Yushkevich	
	16	S	(1678) Jakob Hermann (1903) Irmgard Flugge-Lotz	
	17	S	(1831) Victor Mayer Amedèe Mannheim (1837) Wilhelm Lexis (1944) Krystyna Maria Trybulec Kuperberg	
29	18	M	(1013) Hermann von Reichenau (1635) Robert Hooke (1853) Hendrik Antoon Lorentz	RM114 RM161
	19	T	(1768) Francois Joseph Servois	
	20	W	(1876) Otto Blumenthal (1947) Gerd Binnig	
	21	T	(1620) Jean Picard (1848) Emil Weyr (1849) Robert Simpson Woodward (1861) Herbert Ellsworth Slaught	
	22	F	(1784) Friedrich Wilhelm Bessel	RM198
	23	S	(1775) Etienne Louis Malus (1854) Ivan Slezynsky	
	24	S	(1851) Friedrich Herman Schottky (1871) Paul Epstein (1923) Christine Mary Hamill	
30	25	M	(1808) Johann Benedict Listing	
	26	T	(1903) Kurt Mahler	
	27	W	(1667) Johann Bernoulli (1801) George Biddell Airy (1848) Lorand Baron von Eötvös (1871) Ernst Friedrich Ferdinand Zermelo	RM093 RM090
	28	T	(1954) Gerd Faltings	
	29	F	(1898) Isidor Isaac Rabi	
	30	S	(1889) Vladimir Kosma Zworoklyn	
	31	S	(1704) Gabriel Cramer (1712) Johann Samuel Koenig (1926) Hilary Putnam	RM186

Putnam 2001, B1

Let n be an even positive integer. Write the numbers $1, 2, \dots, n^2$ in the squares of an $n \times n$ grid so that the k -th row, from left to right, is

$$(k-1)n+1, (k-1)n+2, \dots, (k-1)n+n.$$

Color the squares of the grid so that half of the squares in each row and in each column are red and the other half are black (a checkerboard coloring is one possibility). Prove that for each coloring, the sum of the numbers on the red squares is equal to the sum of the numbers on the black squares.

Odd Logic Definitions

Washing machine: law firm for effective divorce of socks.

Irony: drawing trees on paper.

Everyone is free to think whatever he wants on the nature of mathematical entities, or on the truth of the theorems he uses, under the condition that its reasoning can be written in common language [Zermelo-Fraenkel set theory].

Nicolas Bourbaki

In symbols one observes an advantage in discovery which is greatest when they express the exact nature of a thing briefly and, as it were, picture it; then indeed the labor of thought is wonderfully diminished.

Gottfried Wilhelm von Leibniz

[The mathematician], asserts only that certain things are possible and others impossible – in a strongly and strictly mathematical sense of “possible” and “impossible”.

Hilary Putnam

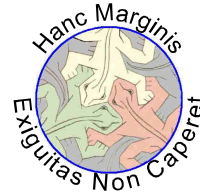
[The infinitesimals] neither have nor can have theory; in practise it is a dangerous instrument in the hands of beginners. Anticipating, for my part, the judgement of posterity, I would predict that this method will be accused one day, and rightly, of having retarded the progress of the mathematical sciences.

Francois-Joseph Servois

[EH] Moore was presenting a report in a circle on a very technical subject. In the middle of the seminar he discovered what appeared to be a mistake (though probably no one else in the room had noticed). He stopped and re-worked the dubious step for a few minutes and then, convinced of the error, suddenly closed the conference – to the dismay of many in the audience. It was evidence of intellectual courage, as well as honesty, and no doubt won him the supreme admiration of every person in the group – an admiration that was not at all diminished, but rather increased, when at a later meeting he announced that he was finally able to prove that the step was correct.

Herbert Ellsworth Slaught

31	1	M	(1861) Ivar Otto Bendixson (1881) Otto Toeplitz (1955) Bernadette Perrin-Riou	
	2	T	(1856) Ferdinand Rudio (1902) Mina Spiegel Rees	
	3	W	(1914) Mark Kac	RM115
	4	T	(1805) Sir William Rowan Hamilton (1838) John Venn	RM079
	5	F	(1802) Niels Henrik Abel (1941) Alexander Keewatin Dewdney	RM055
	6	S	(1638) Nicolas Malebranche (1741) John Wilson	
	7	S	(1868) Ladislaus Josephowitsch Bortkiewicz	
32	8	M	(1902) Paul Adrien Maurice Dirac (1931) Sir Roger Penrose (1974) Manjul Bhargava	RM103 RM189
	9	T	(1537) Francesco Barozzi (Franciscus Barocius) (1940) Linda Goldway Keen	
	10	W	(1602) Gilles Personne de Roberval (1926) Carol Ruth Karp	
	11	T	(1730) Charles Bossut (1842) Enrico D'Ovidio	
	12	F	(1882) Jules Antoine Richard (1887) Erwin Rudolf Josef Alexander Schrödinger	RM103
	13	S	(1625) Erasmus Bartholin (1819) George Gabriel Stokes (1861) Cesare Burali-Forti	RM187
	14	S	(1530) Giovanni Battista Benedetti (1842) Jean Gaston Darboux (1865) Guido Castelnuovo (1866) Charles Gustave Nicolas de La Vallée-Poussin	
33	15	M	(1863) Aleksei Nikolaevich Krylov (1892) Louis Pierre Victor Duc de Broglie (1901) Piotr Sergeevich Novikov	RM175
	16	T	(1773) Louis-Benjamin Francoeur (1821) Arthur Cayley	
	17	W	(1601) Pierre de Fermat	RM091
	18	T	(1685) Brook Taylor	
	19	F	(1646) John Flamsteed (1739) Georg Simon Klugel	
	20	S	(1710) Thomas Simpson (1863) Corrado Segre (1882) Wacław Sierpiński	
	21	S	(1789) Augustin Louis Cauchy	RM127
34	22	M	(1647) Denis Papin	
	23	T	(1683) Giovanni Poleni (1829) Moritz Benedikt Cantor (1842) Osborne Reynolds	
	24	W	(1561) Bartholomeo Pitiscus (1942) Karen Keskulla Uhlenbeck	RM163
	25	T	(1561) Philip Van Lansberge (1844) Thomas Muir	RM199
	26	F	(1728) Johann Heinrich Lambert (1875) Giuseppe Vitali (1965) Marcus Peter Francis du Sautoy	
	27	S	(1858) Giuseppe Peano	RM067
35	28	S	(1862) Roberto Marcolongo (1796) Irénée Jules Bienaymé	RM187
	29	M	(1904) Leonard Roth	
	30	T	(1703) Giovanni Ludovico Calandrini (1856) Carle David Tolmé Runge (1906) Olga Taussky-Todd	RM186 RM139
	31	W	(1821) Hermann Ludwig Ferdinand von Helmholtz (1885) Herbert Westren Turnbull	



Putnam 2001, B2

Find all pairs of real numbers (x, y) satisfying the system of equations

$$1/x + 1/(2y) = (x^2 + 3y^2)(3x^2 + y^2)$$

$$1/x - 1/(2y) = 2(y^4 - x^4).$$

Odd Logic Definitions

Cell phone: a device used for looking less alone while in public places by yourself.

Latte: Italian for “You paid too much for that coffee”.

If you disregard the very simplest cases, there is in all of mathematics not a single infinite series whose sum has been rigorously determined. In other words, the most important parts of mathematics stand without a foundation.

Niels Henrik Abel

I think that there is a moral to this story, namely that it is more important to have beauty in one's equations that to have them fit experiment. If Schrödinger had been more confident of his work, he could have published it some months earlier, and he could have published a more accurate equation. It seems that if one is working from the point of view of getting beauty in one's equations, and if one has really a sound insight, one is on a sure line of progress. If there is not complete agreement between the results of one's work and experiment, one should not allow oneself to be too discouraged, because the discrepancy may well be due to minor features that are not properly taken into account and that will get cleared up with further development of the theory.

Paul Adrien Maurice Dirac

[In the margin of his copy of Diophantus' Arithmetica, Fermat wrote] *Cubum autem in duos cubos, aut quadratoquadratum in duos quadratoquadratos, et generaliter nullam in infinitum ultra quadratum potestatem in duos ejusdem nominis fas est dividere: cujus rei demonstrationem mirabilem sane detexi. Hanc marginis exiguitas non caperet. [To divide a cube into two other cubes, a fourth power or in general any power whatever into two powers of the same denomination above the second is impossible, and I have assuredly found an admirable proof of this, but the margin is too narrow to contain it].*

Pierre De Fermat

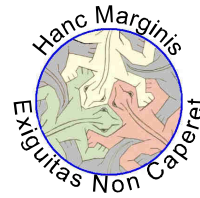
The relationship between those “real” numbers and physical reality is not as direct or binding as it might seem at first, implying as it does, either a mathematical idealization or a infinite refinement, for which there is no clear justification in nature.

Sir Roger Penrose

A monument to Newton! a monument to Shakespeare! Look up to Heaven look into the Human Heart. Till the planets and the passions the affections and the fixed stars are extinguished their names cannot die.

John Wilson

1	T	(1659) Joseph Saurin (1647) Giovanni Ceva (1835) William Stanley Jevons	RM203	
2	F	(1878) Mauriche René Frechet (1923) René Thom	RM080	
3	S	(1814) James Joseph Sylvester (1884) Solomon Lefschetz (1908) Lev Semenovich Pontryagin	RM104	
4	S	(1809) Luigi Federico Menabrea	RM150	
36	5	M	(1667) Giovanni Girolamo Saccheri (1725) Jean Etienne Montucla	RM128
6	T	(1859) Boris Jakovlevich Bukreev (1863) Dimitri Aleksandrovich Grave		
7	W	(1707) George Louis Leclerc Comte de Buffon (1948) Cheryl Elisabeth Praeger (1955) Efim Zelmanov		
8	T	(1584) Gregorius Saint-Vincent (1588) Marin Mersenne	RM092	
9	F	(1860) Frank Morley (1914) Marjorie Lee Browne		
10	S	(1839) Charles Sanders Peirce	RM123	
11	S	(1623) Stefano degli Angeli (1798) Franz Ernst Neumann (1877) Sir James Hopwood Jeans		
37	12	M	(1891) Antoine André Louis Reynaud (1900) Haskell Brooks Curry (1894) Dorothy Maud Wrinch	
13	T	(1873) Constantin Carathéodory (1885) Wilhelm Johann Eugen Blaschke		
14	W	(1858) Henry Burchard Fine (1891) Ivan Matveevich Vinogradov		
15	T	(973) Abu Arrayhan Muhammad Ibn Ahmad Al'Biruni (1886) Paul Pierre Levy	RM164	
16	F	(1494) Francisco Maurolico (1736) Johann Nikolaus Tetens		
17	S	(1743) Marie Jean Antoine Nicolas de Caritat de Condorcet (1826) Georg Friedrich Bernhard Riemann	RM176 RM068	
18	S	(1752) Adrien Marie Legendre	RM140	
38	19	M	(1749) Jean Baptiste Delambre	
20	T	(1842) Alexander Wilhelm von Brill (1861) Frank Nelson Cole		
21	W	(1899) Juliusz Pawel Schauder (1917) Phyllis Nicolson		
22	T	(1765) Paolo Ruffini (1769) Louis Puissant (1803) Jaques Charles Francois Sturm	RM116	
23	F	(1768) William Wallace (1900) David Van Dantzig		
24	S	(1501) Girolamo Cardano (1625) Johan de Witt (1801) Michail Vasilevich Ostrogradski (1862) Winifred Edgerton Merrill (1945) Ian Nicholas Stewart	RM064 RM188 RM056	
25	S	(1819) George Salmon (1888) Stefan Mazurkiewicz		
39	26	M	(1688) Willem Jakob 's Gravesande (1854) Percy Alexander Macmahon (1891) Hans Reichenbach	
27	T	(1855) Paul Émile Appell (1876) Earle Raymond Hedrick (1919) James Hardy Wilkinson		
28	W	(1698) Pierre Louis Moreau de Maupertuis (1761) Ferdinand Francois Desirè Budan de Boislaurent (1873) Julian Lowell Coolidge	RM152	
29	T	(1540) François Viète (1561) Adriaan Van Roomen (1812) Adolph Gopel	RM200 RM200	
30	F	(1775) Robert Adrain (1829) Joseph Wolstenholme (1883) Ernst Hellinger		



Putnam 2001, B3

For any positive integer n , let $\langle n \rangle$ denote the closest integer to \sqrt{n} . Evaluate

$$\sum_{n=1}^{\infty} \frac{2^{\langle n \rangle} + 2^{-\langle n \rangle}}{2^n}$$

Odd Logic Definitions

Happiness: when you roll in the warm spot your laptop left in your bed (also see loneliness).

Web M.D.: someone that makes a mild cold into a deadly disease that will kill you within the next 24 hours.

Dismissing mental torture, and multiplying $5+\sqrt{15}$ by $5-\sqrt{-15}$, we obtain $25-(-15)$. Therefore the product is 40... and thus far does arithmetical subtlety go, of which this, the extreme, is, as I have said, so subtle that it is useless.

Girolamo Cardano

Poincare was the archetypal absent-minded academic – no, come to think of it he was 'present-minded somewhere else', namely in his mathematics, and it's easy to understand why. He was probably the most naturally gifted mathematician of the nineteenth century. If you had a mind like his, you'd also spend most of your time somewhere else, too, revelling in the beauty of the mathiverse.

Jack Cohen, Terry Pratchett, Ian Stewart

In Einstein's famous formula linking mass and energy, the symbol c represents the speed of light. In the Pythagorean theorem, the same letter represents one side of a right triangle. The letters are the same, but nobody expects to get sensible conclusions by identifying a side of a right triangle with the speed of light.

Jack Cohen, Terry Pratchett, Ian Stewart

The successes of the differential equation paradigm were impressive and extensive. Many problems, including basic and important ones, led to equations that could be solved. A process of self-selection set in, whereby equations that could not be solved were automatically of less interest than those that could.

Ian Stewart

Among the minor, yet striking characteristics of mathematics, may be mentioned the fleshless and skeletal build of its propositions; the peculiar difficulty, complication, and stress of its reasonings; the perfect exactitude of its results; their broad universality; their practical infallibility.

Charles Sanders Peirce

So long as a man remains a gregarious and sociable being, he cannot cut himself off from the gratification of the instinct of imparting what he is learning, of propagating through others the ideas and impressions seething in his own brain, without stunting and atrophying his moral nature and drying up the surest sources of his future intellectual replenishment.

James Joseph Sylvester

1	S	(1671) Luigi Guido Grandi (1898) Bela Kerekjarto' (1912) Kathleen Timpson Ollerenshaw	RM177
2	S	(1825) John James Walker (1908) Arthur Erdélyi	
40	3	M	(1944) Pierre René Deligne
4	T	(1759) Louis Francois Antoine Arbogast (1797) Jerome Savary	
5	W	(1732) Nevil Maskelyne (1781) Bernhard Placidus Johann Nepomuk Bolzano (1861) Thomas Little Heath	RM117
6	T	(1552) Matteo Ricci (1831) Julius Wilhelm Richard Dedekind (1908) Sergei Lvovich Sobolev	RM141 RM081
7	F	(1885) Niels Bohr	RM063
8	S	(1908) Hans Arnold Heilbronn	
9	S	(1581) Claude Gaspard Bachet de Meziriac (1704) Johann Andrea von Segner (1873) Karl Schwarzschild (1949) Fan Rong K Chung Graham	RM201 RM153 RM110
41	10	M	(1861) Heinrich Friedrich Karl Ludwig Burkhardt
11	T	(1675) Samuel Clarke (1777) Barnabè Brisson (1881) Lewis Fry Richardson (1885) Alfred Haar (1910) Cahit Arf	
12	W	(1860) Elmer Sperry	
13	T	(1890) Georg Feigl (1893) Kurt Werner Friedrich Reidemeister (1932) John Griggs Thomson	
14	F	(1687) Robert Simson (1801) Joseph Antoine Ferdinand Plateau (1868) Alessandro Padoa	
15	S	(1608) Evangelista Torricelli (1735) Jesse Ramsden (1776) Peter Barlow (1931) Eléna Wexler-Kreindler	RM165
16	S	(1879) Philip Edward Bertrand Jourdain	
42	17	M	(1759) Jacob (II) Bernoulli (1888) Paul Isaac Bernays
18	T	(1741) John Wilson (1945) Margaret Dusa Waddington Mcduff	RM093
19	W	(1903) Jean Frédéric Auguste Delsarte (1910) Subrahmanyan Chandrasekhar	RM153
20	T	(1632) Sir Christopher Wren (1863) William Henry Young (1865) Aleksandr Petrovich Kotelnikov	RM105
21	F	(1677) Nicolaus (I) Bernoulli (1823) Enrico Betti (1855) Giovan Battista Guccia (1893) William Leonard Ferrar (1914) Martin Gardner	RM093 RM150 RM129 RM137
22	S	(1587) Joachim Jungius (1895) Rolf Herman Nevanlinna (1907) Sarvadaman Chowla	
23	S	(1865) Piers Bohl	
43	24	M	(1804) Wilhelm Eduard Weber (1873) Edmund Taylor Whittaker
25	T	(1811) Évariste Galois	RM069
26	W	(1849) Ferdinand Georg Frobenius (1857) Charles Max Mason (1911) Shiing-Shen Chern	
27	T	(1678) Pierre Remond de Montmort (1856) Ernest William Hobson	
28	F	(1804) Pierre François Verhulst	
29	S	(1925) Klaus Roth	
30	S	(1906) Andrej Nikolaevich Tichonov (1946) William Paul Thurston	
44	31	M	(1711) Laura Maria Catarina Bassi (1815) Karl Theodor Wilhelm Weierstrass (1935) Ronald Lewis Graham



Putnam 2001, B4

Let S denote the set of rational numbers different from $\{-1, 0, 1\}$. Define $f: S \rightarrow S$ by $f(x) = x - 1/x$. Prove or disprove that

$$\bigcap_{n=1}^{\infty} f^{(n)}(S) = \emptyset$$

where $f^{(n)}$ denotes f composed with itself n times.

Odd Logic Definitions

Friend: one of the many strangers on Facebook.

Hipster: mainstream.

$2^{30}(2^{31} - 1)$ is the greatest perfect number that will ever be discovered, for, as they are merely curious without being useful, it is not likely that any person will attempt to find a number beyond it.

Peter Barlow

Anyone who is not shocked by quantum theory has not understood it.

Niels Bohr

How wonderful that we have met with a paradox. Now we have some hope of making progress.

Niels Bohr

Unfortunately what is little recognized is that the most worthwhile scientific books are those in which the author clearly indicates what he does not know; for an author most hurts his readers by concealing difficulties.

Évariste Galois

Who has not been amazed to learn that the function $y = e^x$, like a phoenix rising again from its own ashes, is its own derivative?

Francois Le Lionnais

Usually mathematicians have to shoot somebody to get this much publicity. [On the attention he received after finding the flaw in Intel's Pentium chip in 1994]

Thomas R. Nicely

[with Norbert Wiener] The best material model of a cat is another, or preferably the same, cat.

A. Rosenblueth

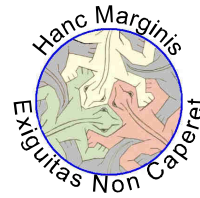
It is true that a mathematician who is not also something of a poet will never be a perfect mathematician.

Karl Theodor Wilhelm Weierstrass

Much as I venerate the name of Newton, I am not obliged to believe that he was infallible. I see ... with regret that he was liable to err, and that his authority has, perhaps, sometimes even retarded the progress of science.

William Henry Young

1	T	(1535) Giambattista della Porta		
2	W	(1815) George Boole (1826) Henry John Stephen Smith	RM094	
3	T	(1867) Martin Wilhelm Kutta (1878) Arthur Byron Coble (1896) Raymond Louis Wilder (1906) Carl Benjamin Boyer		
4	F	(1744) Johann (III) Bernoulli (1865) Pierre Simon Girard	RM093	
5	S	(1848) James Whitbread Lee Glaisher (1930) John Frank Adams		
6	S	(1906) Emma Markovna Trotskaia Lehmer		
45	7	M	(1660) Thomas Fantet de Lagny (1799) Karl Heinrich Graffe (1567) Clara Immerwahr (1898) Raphael Salem	RM182
8	T	(1656) Edmond Halley (1781) Giovanni Antonio Amedeo Plana (1846) Eugenio Bertini (1848) Fredrich Ludwig Gottlob Frege (1854) Johannes Robert Rydberg (1869) Felix Hausdorff	RM190 RM154	
9	W	(1847) Carlo Alberto Castigliano (1885) Theodor Franz Eduard Kaluza (1885) Hermann Klaus Hugo Weyl (1906) Jaroslav Borisovich Lopatynsky (1913) Hedwig Eva Maria Kiesler (Hedy Lamarr) (1922) Imre Lakatos	RM178 RM202 RM082 RM144	
10	T	(1829) Helwin Bruno Christoffel		
11	F	(1904) John Henry Constantine Whitehead		
12	S	(1825) Michail Egorovich Vashchenko-Zakharchenko (1842) John William Strutt Lord Rayleigh (1927) Yutaka Taniyama		
13	S	(1876) Ernest Julius Wilkzynsky (1878) Max Wilhelm Dehn		
46	14	M	(1845) Ulisse Dini (1919) Paulette Libermann (1975) Martin Hairer	RM189
15	T	(1688) Louis Bertrand Castel (1793) Michel Chasles (1794) Franz Adolph Taurinus		
16	W	(1835) Eugenio Beltrami	RM150	
17	T	(1597) Henry Gellibrand (1717) Jean Le Rond D'Alembert (1790) August Ferdinand Möbius	RM166 RM118	
18	F	(1872) Giovanni Enrico Eugenio Vacca (1927) Jon Leslie Britton		
19	S	(1894) Heinz Hopf (1900) Michail Alekseevich Lavrentev (1901) Nina Karlovna Bari		
20	S	(1889) Edwin Powell Hubble (1924) Benoît Mandelbrot (1963) William Timothy Gowers		
47	21	M	(1867) Dimitri Sintov	
22	T	(1803) Giusto Bellavitis (1840) Émile Michel Hyacinthe Lemoine		
23	W	(1616) John Wallis (1820) Issac Todhunter (1917) Elizabeth Leonard Scott	RM070 RM106	
24	T	(1549) Duncan Maclaren Young Sommerville (1909) Gerhard Gentzen		
25	F	(1841) Fredrich Wilhelm Karl Ernst Schröder (1873) Claude Louis Mathieu (1943) Evelyn Merle Roden Nelson		
26	S	(1894) Norbert Wiener (1946) Enrico Bombieri	RM172	
27	S	(1867) Arthur Lee Dixon		
48	28	M	(1898) John Wishart	
29	T	(1803) Christian Andreas Doppler (1849) Horace Lamb (1879) Nikolay Mitrofanovich Krylov		
30	W	(1549) Sir Henry Savile (1969) Matilde Marcolli	RM142	



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Let a and b be real numbers in the interval $(0, 1/2)$, and let g be a continuous realvalued function such that $g(g(x)) = ag(x)+bx$ for all real x . Prove that $g(x) = cx$ for some constant c .

Odd Logic Definitions

Pets: the only members of your family you actually like.

Clapping: repeatedly high-fiving yourself for someone else's accomplishment.

Many early civilizations shared various aspects of numerology, but the Pythagoreans carried number worship to its extreme, basing their philosophy and their life on it. The number 1, they argued, is the generator of numbers and the numbers reason; the number 2 is the first even or female number, the number of opinion; 3 is the first true male number, the number of harmony, being composed of harmony and diversity; 4 is the number of justice and retribution, indicating the squaring of the accounts; 5 is the number of marriage, the union of the first true male and female numbers; and 6 is the number of creation. Each number in turn had its peculiar attributes. The holiest of all was the number 10, or the tetractys, for it represented the number of the universe, including the sum of all of the possible geometric dimensions. A single point is the generator of dimensions, two points determine a line of dimension one, three points (not on a line) determine a triangle with area of dimension two, and four points(not in a plane) determine a tetrahedon with volume of dimension three; the sum of the numbers representing all dimensions, therefore, is the reversed number 10. It is a tribute to the abstraction of Pythagorean mathematics that the veneration of the number 10 evidently was not dictated by the anatomy of the human hand or foot.

Carl Benjamin Boyer

If you know from experience that a simplification will have a small effect on the response, the simplification has to be done.

William Timothy Gowers

[Asked whether he would like to see an experimental demonstration of conical refraction] *No. I have been teaching it all my life, and I do not want to have my ideas upset.*

Isaac Todhunter

The constructs of the mathematical mind are at the same time free and necessary. The individual mathematician feels free to define his notions and set up his axioms as he pleases. But the question is will he get his fellow mathematician interested in the constructs of his imagination. We cannot help the feeling that certain mathematical structures which have evolved through the combined efforts of the mathematical community bear the stamp of a necessity not affected by the accidents of their historical birth. Everybody who looks at the spectacle of modern algebra will be struck by this complementarity of freedom and necessity.

Hermann Klaus Hugo Weyl

1	T	(1792) Nikolay Yvanovich Lobachevsky (1847) Christine Ladd-Franklin	RM083	
2	F	(1831) Paul David Gustav du Bois-Reymond (1901) George Frederick James Temple		
3	S	(1903) Sidney Goldstein (1924) John Backus		
4	S	(1795) Thomas Carlyle		
49	5	M	(1868) Arnold Johannes Wilhelm Sommerfeld (1901) Werner Karl Heisenberg (1907) Giuseppe Occhialini	RM155 RM122
6	T	(1682) Giulio Carlo Fagnano dei Toschi		
7	W	(1823) Leopold Kronecker (1830) Antonio Luigi Gaudenzio Giuseppe Cremona (1924) Mary Ellen Rudin	RM150	
8	T	(1508) Regnier Gemma Frisius (1865) Jaques Salomon Hadamard (1919) Julia Bowman Robinson		
9	F	(1883) Nikolai Nikolaievich Luzin (1906) Grace Brewster Murray Hopper (1917) Sergei Vasilovich Fomin		
10	S	(1804) Karl Gustav Jacob Jacobi (1815) Augusta Ada King Countess Of Lovelace	RM059	
11	S	(1882) Max Born	RM155	
50	12	M	(1832) Peter Ludwig Mejdell Sylow (1913) Emma Castelnuovo	RM191
13	T	(1724) Franz Ulrich Theodosius Aepinus (1887) George Polya	RM131	
14	W	(1546) Tycho Brahe		
15	T	(1802) János Bolyai (1923) Freeman John Dyson	RM083	
16	F	(1804) Wiktor Yakovievich Bunyakowsky		
17	S	(1706) Gabrielle Emile Le Tonnelier de Breteuil du Chatelet (1835) Felice Casorati (1842) Marius Sophus Lie (1900) Dame Mary Lucy Cartwright		
18	S	(1856) Joseph John Thomson (1917) Roger Lyndon (1942) Lenore Blum	RM161	
51	19	M	(1783) Charles Julien Brianchon (1854) Marcel Louis Brillouin (1887) Charles Galton Darwin	RM138
20	T	(1494) Oronce Fine (1648) Tommaso Ceva (1875) Francesco Paolo Cantelli	RM203	
21	W	(1878) Jan Łukasiewicz (1921) Edith Hirsch Luchins (1932) John Robert Ringrose		
22	T	(1824) Francesco Brioschi (1859) Otto Ludwig Hölder (1877) Tommaso Boggio (1887) Srinivasa Aiyangar Ramanujan	RM150	
23	F	(1872) Georgii Yurii Pfeiffer		
24	S	(1822) Charles Hermite (1868) Emmanuel Lasker	RM095 RM167	
25	S	(1642) Isaac Newton (1900) Antoni Zygmund	RM071	
52	26	M	(1780) Mary Fairfax Greig Somerville (1791) Charles Babbage (1937) John Horton Conway	RM059 RM119
27	T	(1571) Johannes Kepler (1654) Jacob (Jacques) Bernoulli	RM093	
28	W	(1808) Athanase Louis Victoire Duprè (1882) Arthur Stanley Eddington (1903) John von Neumann	RM179 RM107	
29	T	(1856) Thomas Jan Stieltjes		
30	F	(1897) Stanislaw Saks		
31	S	(1872) Volodymyr Levitsky (1896) Carl Ludwig Siegel (1945) Leonard Adleman (1952) Vaughan Frederick Randall Jones	RM143	



Putnam 2001, B6

Assume that $(a_n)_{n \geq 1}$ is an increasing sequence of positive real numbers such that $\lim a_n/n = 0$.

Must there exist infinitely many positive integers n such that $a_{n-i} + a_{n+i} < 2a_n$ for $i = 1, 2, \dots, n-1$?

Odd Logic Definitions

Digital native: any person who, seeing a FD 3.5", comments: "Cool! You made the 'save' icon with a 3D printer!"

We define the art of conjecture, or stochastic art, as the art of evaluating as exactly as possible the probabilities of things, so that in our judgments and actions we can always base ourselves on what has been found to be the best, the most appropriate, the most certain, the best advised; this is the only object of the wisdom of the philosopher and the prudence of the statesman.

Jacob Bernoulli

Teaching school is but another word for sure and not very slow destruction.

Thomas Carlyle

The bottom line for mathematicians is that the architecture has to be right. In all the mathematics that I did, the essential point was to find the right architecture. It's like building a bridge. Once the main lines of the structure are right, then the details miraculously fit. The problem is the overall design.

Freeman John Dyson

To the pure geometer the radius of curvature is an incidental characteristic – like the grin of the Cheshire cat. To the physicist it is an indispensable characteristic. It would be going too far to say that to the physicist the cat is merely incidental to the grin. Physics is concerned with interrelatedness such as the interrelatedness of cats and grins. In this case the "cat without a grin" and the "grin without a cat" are equally set aside as purely mathematical phantasies.

Arthur Stanley Eddington

It is impossible to trap modern physics into predicting anything with perfect determinism because it deals with probabilities from the outset.

Arthur Stanley Eddington

There exists, if I am not mistaken, an entire world which is the totality of mathematical truths, to which we have access only with our mind, just as a world of physical reality exists, the one like the other independent of ourselves, both of divine creation.

Charles Hermite