Science & Art

任一 Yi REN

Introduction To Dialectics Of Nature

2022.10.24

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10.24

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Introduction To Dialectics Of Nature

10.24 = 2 ^ 10 / 10 ^ 2

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$1024_{10} = (1 << 10_{10}) = 10000000000_2$

1 ? 0?

To be or not to be

Fundamental theorem of algebra

The **fundamental theorem of algebra**, also known as **d'Alembert's theorem**,[1] or the **d'Alembert–Gauss theorem**,[2] states that every non-constant single-variable polynomial with complex coefficients has at least one complex root. This includes polynomials with real coefficients, since every real number is a complex number with its imaginary part equal to zero.

Equivalently (by definition), the theorem states that the field of complex numbers is algebraically closed.

https://en.wikipedia.org/wiki/Fundamental_theorem_of_algebra

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$1024_{10} = (1 << 10_{10}) = 10000000000_2$

1 ? 0?

To be or not to be

Euclidean geometry

1. To draw a straight line from any point to any point.
2. To produce (extend) a finite straight line continuously in a straight line.
3. To describe a circle with any centre and distance (radius).
4. That all right angles are equal to one another.
5. [The parallel postulate]: That, if a straight line falling on two straight lines make the interior angles on the same side less than two right angles, the two straight lines, if produced indefinitely, meet on that side on which the angles are less than two right angles.

https://en.wikipedia.org/wiki/Euclidean_geometry

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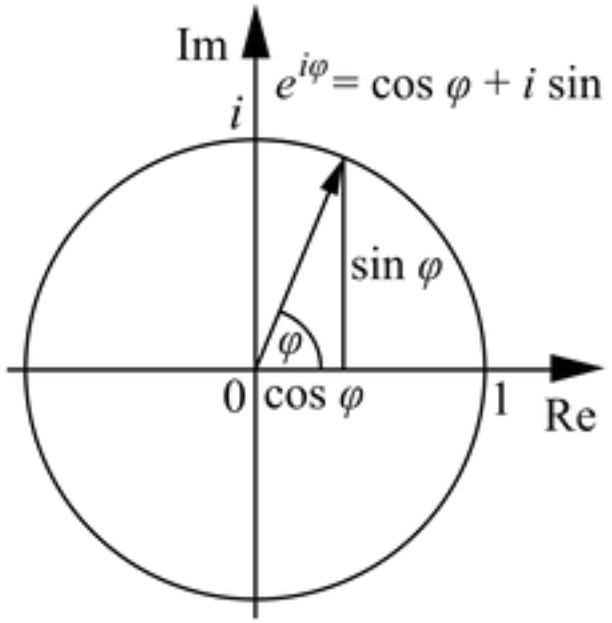
$$e^{ix} = \cos x + i \sin x$$

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



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https://en.wikipedia.org/wiki/Euler%27s_formula

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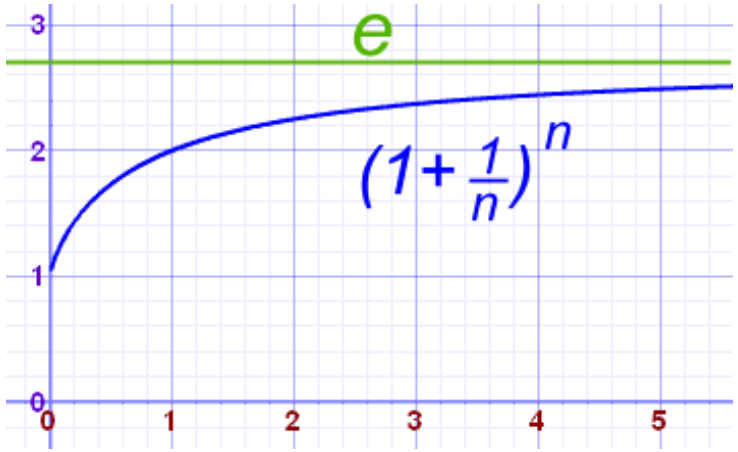
$$e = \lim_{n\to\infty} \left(1 + \frac{1}{n}\right)^n$$

$$e = \sum_{n=0}^{\infty} \frac{1}{n!} = 1 + \frac{1}{1} + \frac{1}{1\cdot 2} + \frac{1}{1\cdot 2\cdot 3} + \cdots$$

$$r = a \cdot e^{b\cdot\theta}$$



https://www.zhihu.com/question/24264370

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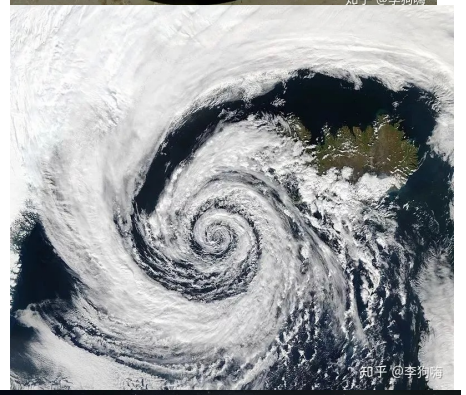

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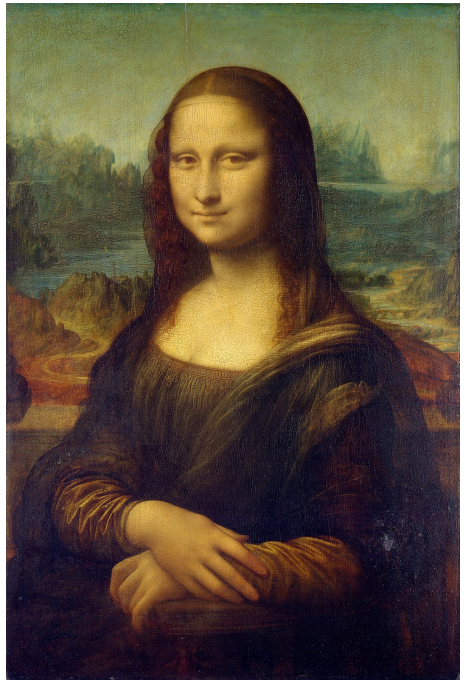


Science

In mathematics, two quantities are in the **golden ratio** if their ratio is the same as the ratio of their sum to the larger of the two quantities. Expressed algebraically, for quantities a and b with $a > b > 0$,

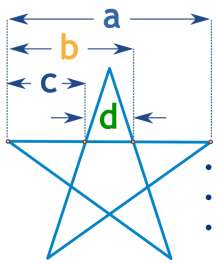
$$\frac{a+b}{a} = \frac{a}{b} = \varphi$$

where the Greek letter phi (φ or ϕ) denotes the golden ratio.[a] The constant φ satisfies the quadratic equation $\varphi^2 = \varphi + 1$, and is an irrational number with a value of[1]

$$\varphi = \frac{1+\sqrt{5}}{2} = 1.618\ 033\ 988\ 749....$$

Pics from Google search results

Art

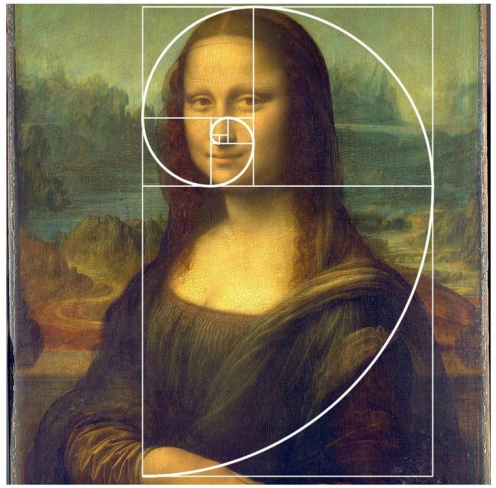


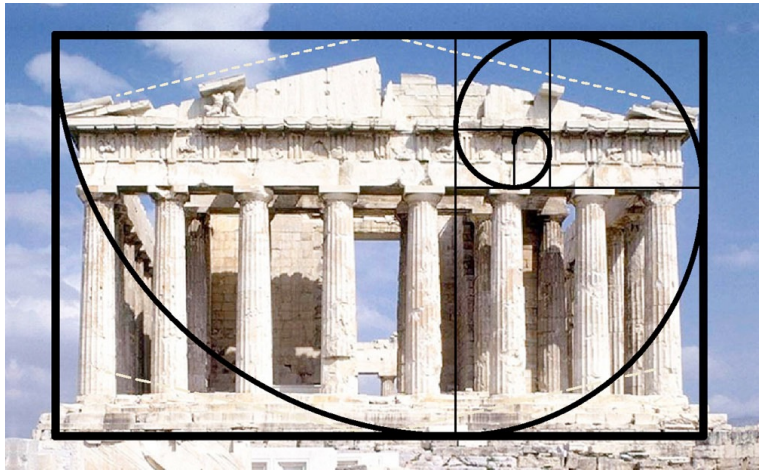
Pentagram

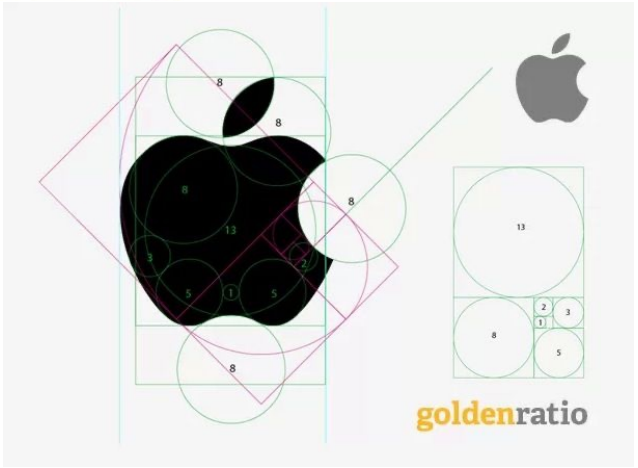
No, not witchcraft! The pentagram is more famous as a magical or holy symbol. And it has the Golden Ratio in it:

- a/b = 1.618...
- b/c = 1.618...
- c/d = 1.618...

Read more at Pentagram.







Science

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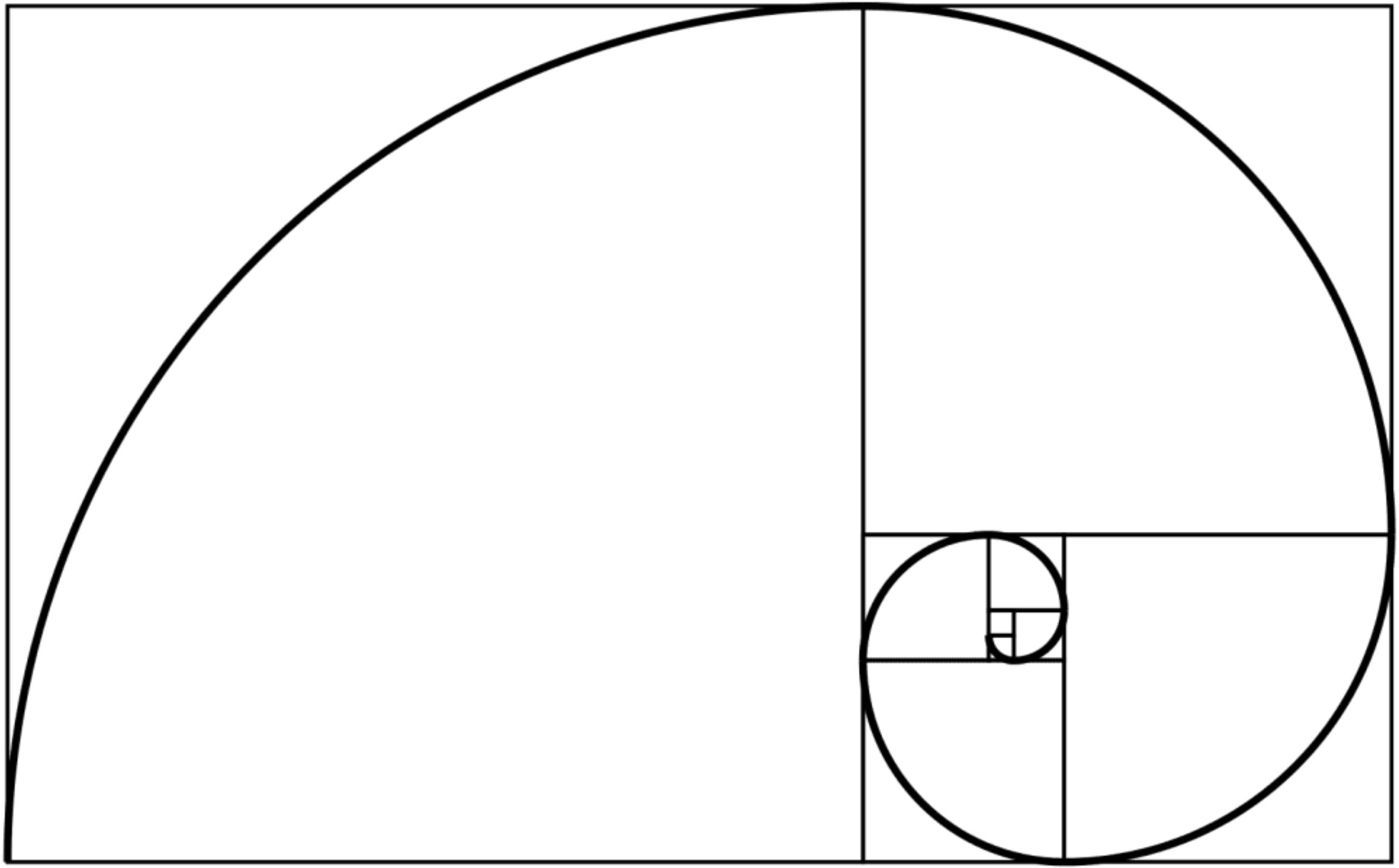
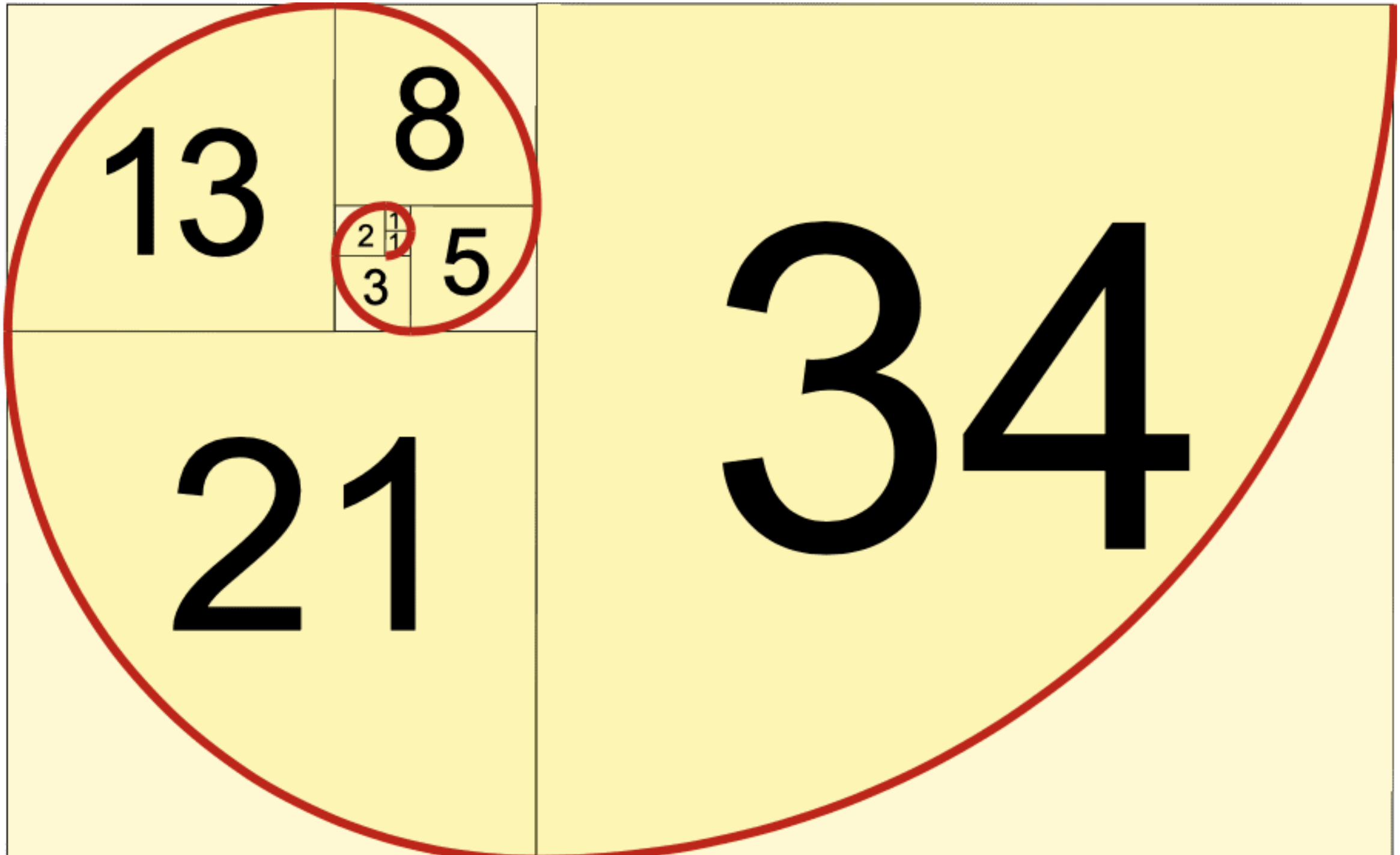
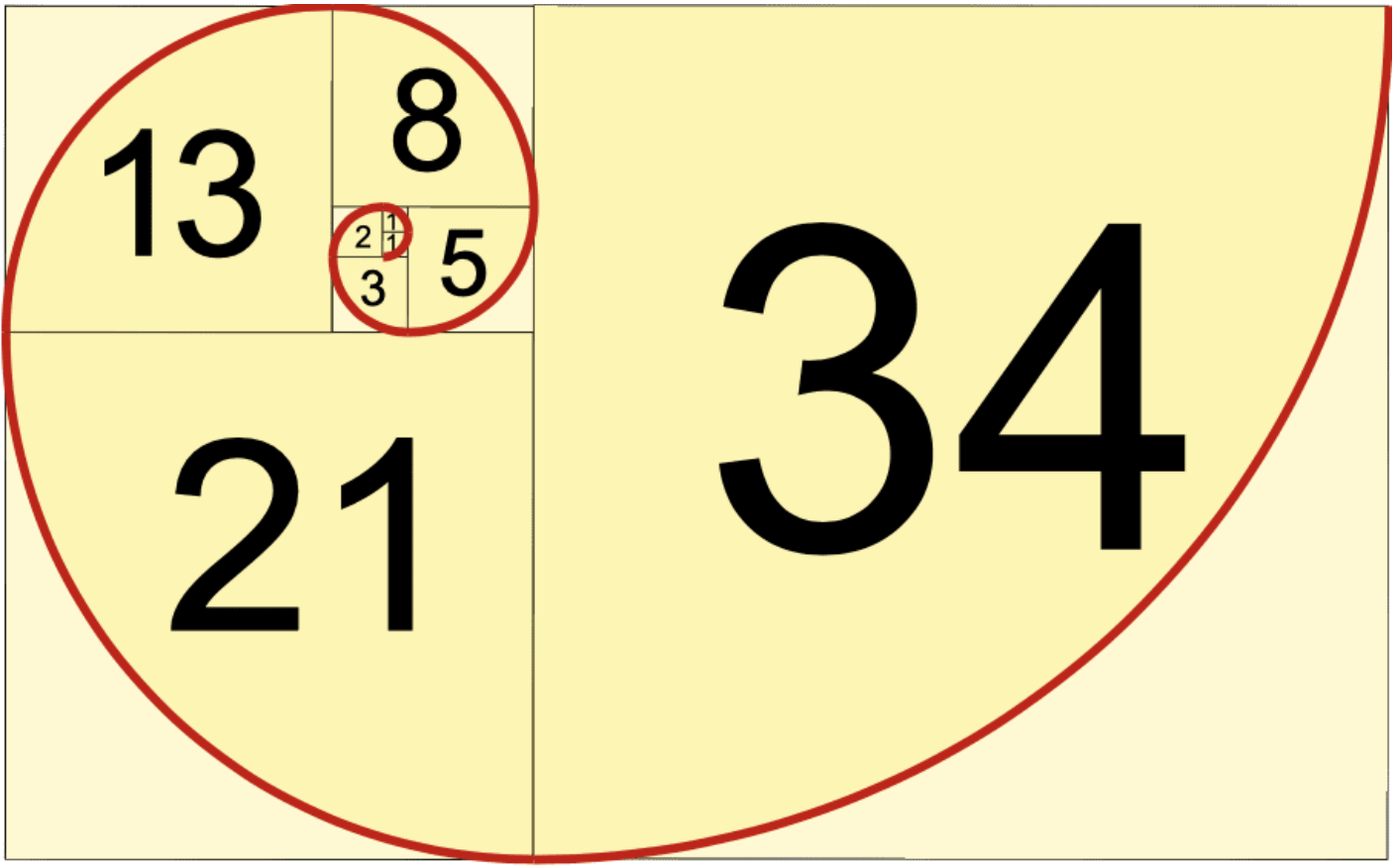
https://www.elegantthemes.com/blog/design/the-golden-ratio-the-ultimate-guide-to-understanding-and-using-it




13
8
2
1
1
3
5
21
34

杨辉三角 (Pascal's Triangle), Fibonacci Number



0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144.

$$
\begin{array}{ccccccccccc}
 & & & & & 1 & & & & & \\
 & & & & 1 & & 1 & & & & \\
 & & & 1 & & 2 & & 1 & & & \\
 & & 1 & & 3 & & 3 & & 1 & & \\
 & 1 & & 4 & & 6 & & 4 & & 1 & \\
1 & & 5 & & 10 & & 10 & & 5 & & 1 \\
1 & 6 & & 15 & & 20 & & 15 & & 6 & 1 \\
1 & & 7 & & 21 & & 35 & & 35 & & 21 & & 7 & & 1
\end{array}
$$

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Limit of Fibonacci Number

$$\frac{F_n}{F_{n-1}} \to ?\,, n \to \infty$$

$$\lim_{n\to\infty} \frac{F_{n+1}}{F_n} = \varphi$$

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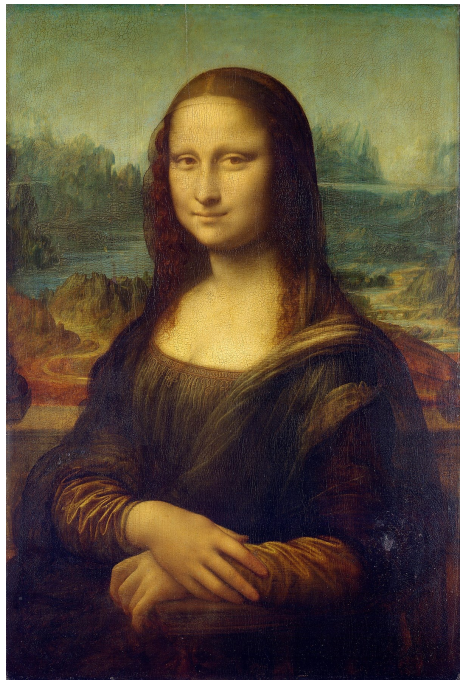
$$\frac{f_n}{f_{n-1}} \to ?\,, n \to \inf$$



$$\lim_{n\to\infty} \frac{F_{n+1}}{F_n} = \varphi$$

$$\begin{array}{ccccccccccc}
 & & & & & 1 & & & & & \\
 & & & & 1 & & 1 & & & & \\
 & & & 1 & & 2 & & 1 & & & \\
 & & 1 & & 3 & & 3 & & 1 & & \\
 & 1 & & 4 & & 6 & & 4 & & 1 & \\
1 & & 5 & & 10 & & 10 & & 5 & & 1
\end{array}$$

$$\begin{array}{ccccccccccccc}
 & & & & & & 1 & & & & & & \\
 & & & & & 1 & & 1 & & & & & \\
 & & & & 1 & & 2 & & 1 & & & & \\
 & & & 1 & & 3 & & 3 & & 1 & & & \\
 & & 1 & & 4 & & 6 & & 4 & & 1 & & \\
 & 1 & & 5 & & 10 & & 10 & & 5 & & 1 & \\
1 & & 6 & & 15 & & 20 & & 15 & & 6 & & 1
\end{array}$$

$$\begin{array}{ccccccccccccccc}
 & & & & & & & 1 & & & & & & & \\
 & & & & & & 1 & & 1 & & & & & & \\
 & & & & & 1 & & 2 & & 1 & & & & & \\
 & & & & 1 & & 3 & & 3 & & 1 & & & & \\
 & & & 1 & & 4 & & 6 & & 4 & & 1 & & & \\
 & & 1 & & 5 & & 10 & & 10 & & 5 & & 1 & & \\
 & 1 & & 6 & & 15 & & 20 & & 15 & & 6 & & 1 & \\
1 & & 7 & & 21 & & 35 & & 35 & & 21 & & 7 & & 1
\end{array}$$

https://en.wikipedia.org/wiki/Fibonacci_number

科学和艺术的美是统一的！

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科学，是简洁和优美的
简洁和优美的，就是艺术

科学和艺术的美是统一的！

这种统一的美，来源于自然

自然的美的投影
造就了科学的美和艺术的美

Photo by Bogomil Mihaylov on Unsplash

科学和艺术的美是统一的！

这种统一的美，来源于自然！

这种美，投影到人身上，是什么？