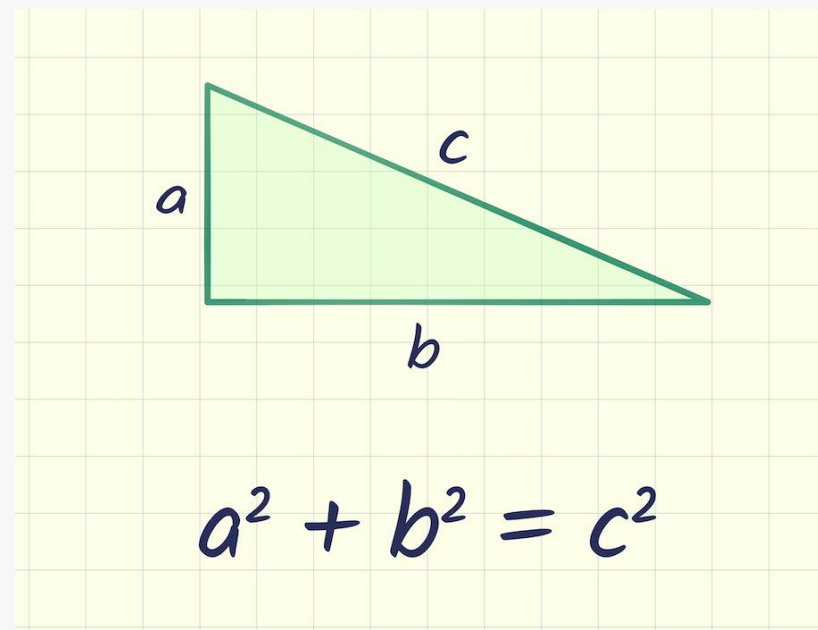


I – TEOREMA DE PITÁGORAS

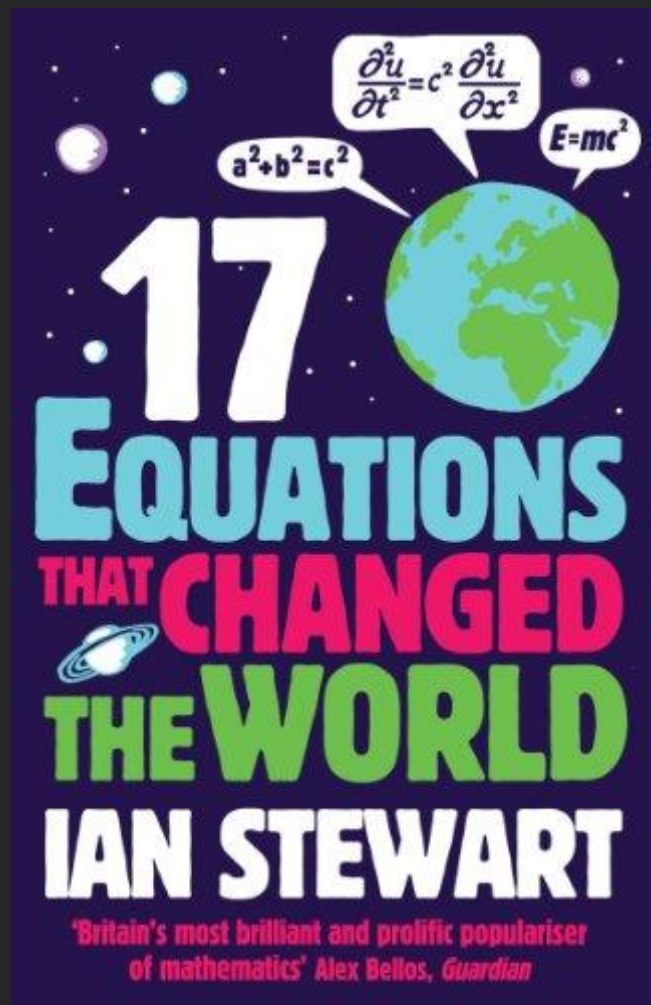
<https://youtu.be/HhuGGPFijX0>

17 EQUAÇÕES QUE MUDARAM O MUNDO – OUTSPOKEN MARKET NA PRÁTICA – LEANDRO GUERRA

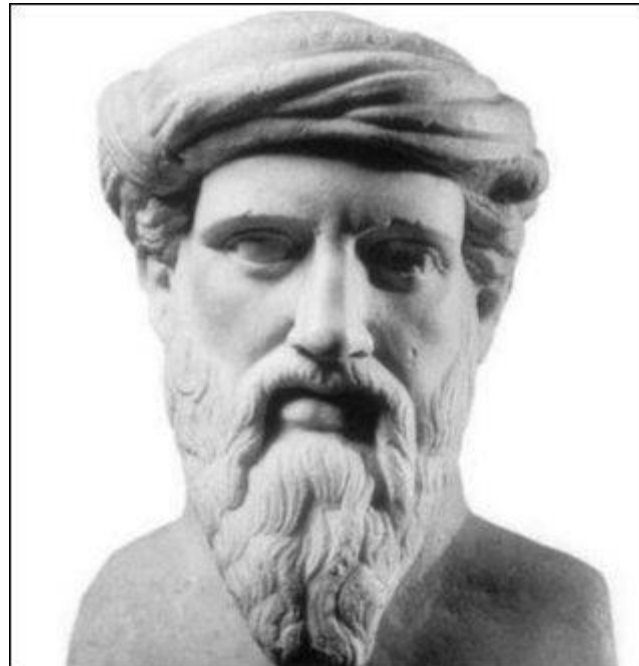


17 Equations That Changed the World by Ian Stewart

1. **Pythagoras's Theorem** $a^2 + b^2 = c^2$ Pythagoras, 530 BC
2. **Logarithms** $\log xy = \log x + \log y$ John Napier, 1610
3. **Calculus** $\frac{df}{dt} = \lim_{h \rightarrow 0} \frac{f(t+h) - f(t)}{h}$ Newton, 1668
4. **Law of Gravity** $F = G \frac{m_1 m_2}{r^2}$ Newton, 1687
5. **The Square Root of Minus One** $i^2 = -1$ Euler, 1750
6. **Euler's Formula for Polyhedra** $V - E + F = 2$ Euler, 1751
7. **Normal Distribution** $\Phi(x) = \frac{1}{\sqrt{2\pi\rho}} e^{-\frac{(x-\mu)^2}{2\rho}}$ C.F. Gauss, 1810
8. **Wave Equation** $\frac{\partial^2 u}{\partial t^2} = c^2 \frac{\partial^2 u}{\partial x^2}$ J. d'Alembert, 1746
9. **Fourier Transform** $f(\omega) = \int_{-\infty}^{\infty} f(x) e^{-2\pi i x \omega} dx$ J. Fourier, 1822
10. **Navier-Stokes Equation** $\rho \left(\frac{\partial \mathbf{v}}{\partial t} + \mathbf{v} \cdot \nabla \mathbf{v} \right) = -\nabla p + \nabla \cdot \mathbf{T} + \mathbf{f}$ C. Navier, G. Stokes, 1845
11. **Maxwell's Equations** $\nabla \cdot \mathbf{E} = \frac{\rho}{\epsilon_0}$ $\nabla \cdot \mathbf{H} = 0$ $\nabla \times \mathbf{E} = -\frac{1}{c} \frac{\partial \mathbf{H}}{\partial t}$ $\nabla \times \mathbf{H} = \frac{1}{c} \frac{\partial \mathbf{E}}{\partial t}$ J.C. Maxwell, 1865
12. **Second Law of Thermodynamics** $dS \geq 0$ L. Boltzmann, 1874
13. **Relativity** $E = mc^2$ Einstein, 1905
14. **Schrodinger's Equation** $i\hbar \frac{\partial}{\partial t} \Psi = H\Psi$ E. Schrodinger, 1927
15. **Information Theory** $H = -\sum p(x) \log p(x)$ C. Shannon, 1949
16. **Chaos Theory** $x_{i+1} = kx_i(1 - x_i)$ Robert May, 1975
17. **Black-Scholes Equation** $\frac{1}{2}\sigma^2 S^2 \frac{\partial^2 V}{\partial S^2} + rS \frac{\partial V}{\partial S} + \frac{\partial V}{\partial t} - rV = 0$ F. Black, M. Scholes, 1990

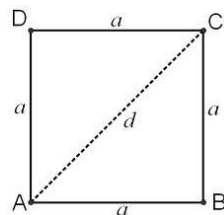


PITÁGORAS?



Pitágoras
(580 a.C. /570 a.C. – 495 a.C.)

E PARA O QUE ISSO SERVE?

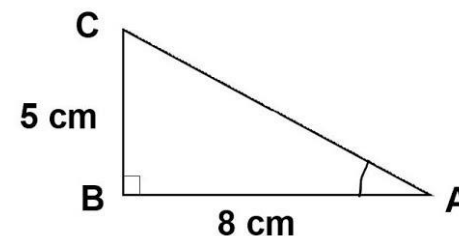


Para encontrar a diagonal de um quadrado

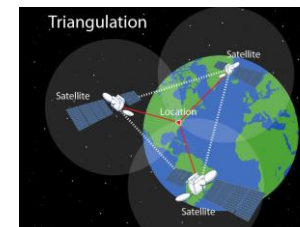
$$c^2 = a^2 + b^2$$



Agrimensura é o processo pelo qual os cartógrafos calculam as distâncias e alturas numéricas entre pontos diferentes antes de criar um mapa.



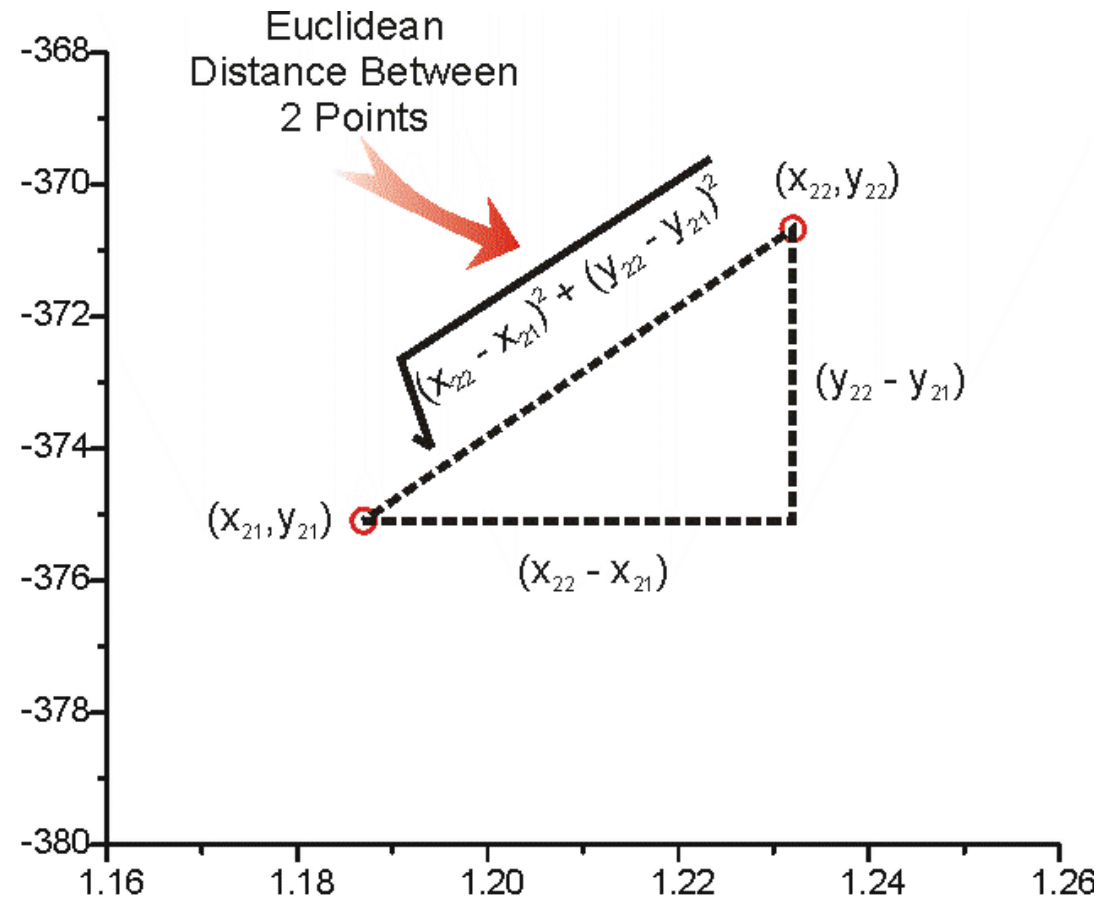
Em um triângulo retângulo, podemos calcular o comprimento de qualquer lado se os outros dois lados forem dados



Triangulação é usada hoje para identificar a localização relativa na navegação GPS

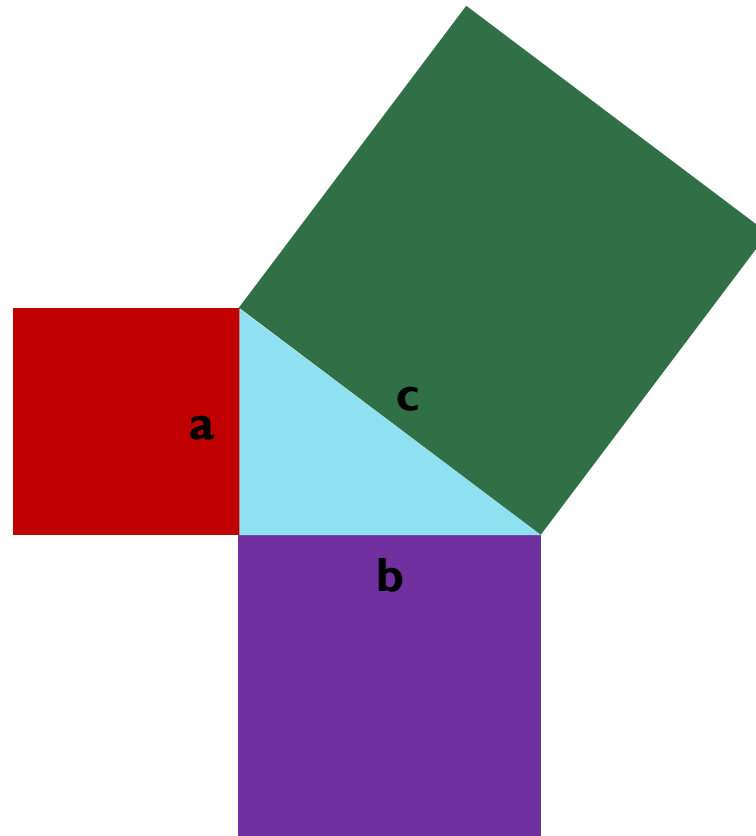
E PARA O QUE ISSO SERVE?

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



TEOREMA DE PITÁGORAS

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



$$a = 3$$

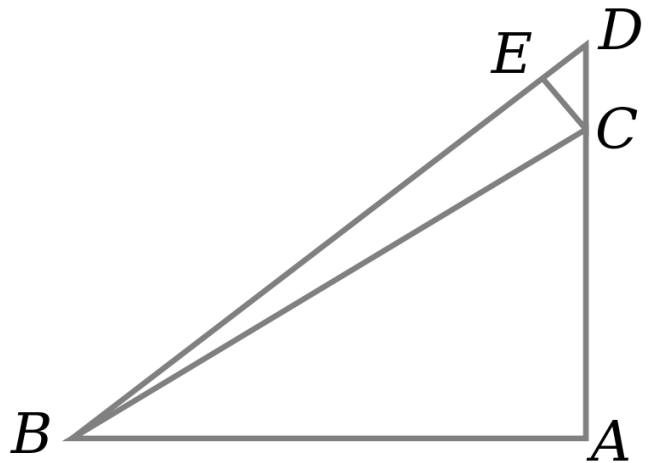
$$b = 4$$

$$c = 5$$

$$5^2 = 4^2 + 3^2$$

$$25 = 16 + 9$$

TEOREMA DE PITÁGORAS



$$\frac{dy}{dx} = \frac{x}{y}$$

$$y \, dy = x \, dx$$

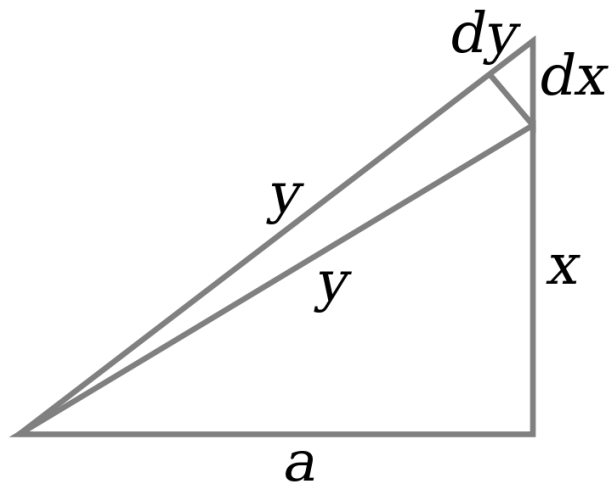
$$\int y \, dy = \int x \, dx$$

$$y^2 = x^2 + C$$

se $x = 0, y^2 = C$
e $C = a^2$

Logo,

$$y^2 = x^2 + a^2$$





OBRIGADO E ATÉ A PRÓXIMA!

OUTSPOKEN MARKET

