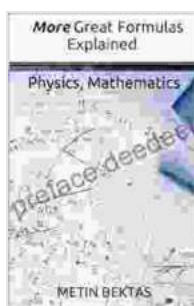


More Great Formulas Explained: Metin Bektas



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★★★★☆ 4.5 out of 5

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Mathematics is a vast and complex subject, but it can be made more manageable by understanding the underlying formulas. Formulas are equations that express relationships between different variables, and they can be used to solve problems, make predictions, and design new technologies.

In this article, we will explore some of the most important and useful formulas in mathematics, as explained by Metin Bektas. These formulas cover a wide range of topics, from basic arithmetic to advanced calculus. We will provide clear and concise explanations of each formula, along with examples to illustrate their use.

Basic Arithmetic Formulas

The following formulas are essential for performing basic arithmetic operations:

- **Addition:** $a + b = c$
- **Subtraction:** $a - b = c$
- **Multiplication:** $a \times b = c$
- **Division:** $a \div b = c$
- **Exponents:** $a^n = c$
- **Radicals:** $\sqrt{a} = c$

Algebra Formulas

Algebra is the branch of mathematics that deals with variables and equations. The following formulas are essential for solving algebraic equations:

- **Linear equations:** $ax + b = c$
- **Quadratic equations:** $ax^2 + bx + c = 0$
- **Cubic equations:** $ax^3 + bx^2 + cx + d = 0$
- **Polynomials:** $f(x) = a_0 + a_1x + a_2x^2 + \dots + a_nx^n$
- **Logarithms:** $\log_a b = c$
- **Exponentials:** $e^x = c$

Geometry Formulas

Geometry is the branch of mathematics that deals with shapes and their properties. The following formulas are essential for solving geometry problems:

- **Area of a triangle:** $A = \frac{1}{2}bh$
- **Area of a rectangle:** $A = lw$
- **Area of a circle:** $A = \pi r^2$
- **Volume of a cube:** $V = s^3$
- **Volume of a sphere:** $V = \frac{4}{3}\pi r^3$
- **Pythagorean theorem:** $a^2 + b^2 = c^2$

Trigonometry Formulas

Trigonometry is the branch of mathematics that deals with angles and triangles. The following formulas are essential for solving trigonometry problems:

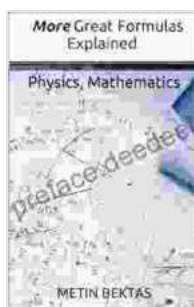
- **Sine:** $\sin(\theta) = a/c$
- **Cosine:** $\cos(\theta) = b/c$
- **Tangent:** $\tan(\theta) = a/b$
- **Pythagorean identity:** $\sin^2(\theta) + \cos^2(\theta) = 1$
- **Double-angle formulas:** $\sin(2\theta) = 2\sin(\theta)\cos(\theta)$, $\cos(2\theta) = \cos^2(\theta) - \sin^2(\theta)$, $\tan(2\theta) = \frac{2\tan(\theta)}{1 - \tan^2(\theta)}$
- **Half-angle formulas:** $\sin(\theta/2) = \pm\sqrt{\frac{1 - \cos(\theta)}{2}}$, $\cos(\theta/2) = \pm\sqrt{\frac{1 + \cos(\theta)}{2}}$, $\tan(\theta/2) = \pm\sqrt{\frac{1 - \cos(\theta)}{1 + \cos(\theta)}}$

Calculus Formulas

Calculus is the branch of mathematics that deals with change. The following formulas are essential for solving calculus problems:

- **Derivative of a function:** $f'(x) = \lim_{h \rightarrow 0} (f(x+h) - f(x))/h$
- **Integral of a function:** $\int f(x) dx = F(x) + C$
- **Chain rule:** $d/dx (f(g(x))) = f'(g(x))g'(x)$
- **Product rule:** $d/dx (f(x)g(x)) = f'(x)g(x) + f(x)g'(x)$
- **Quotient rule:** $d/dx (f(x)/g(x)) = (f'(x)g(x) - f(x)g'(x))/g(x)^2$

The formulas presented in this article are just a small sample of the many that are used in mathematics. By understanding these formulas, you will be able to solve a wide range of problems and gain a deeper understanding of the world around you.



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