

Álgebra

Leyes de exponentes y radicales

1. $x^n x^m = x^{n+m}$
2. $\frac{x^n}{x^m} = x^{n-m}; x \neq 0$
3. $(x^n)^m = x^{nm}$
4. $x^{\frac{n}{m}} = \sqrt[m]{x^n} = (\sqrt[m]{x})^n$
5. $x^{-n} = \frac{1}{x^n}; x \neq 0$
6. $\left(\frac{x}{y}\right)^n = \frac{x^n}{y^n}; y \neq 0$
7. $\sqrt[n]{xy} = \sqrt[n]{x} \sqrt[n]{y}; x > 0; y > 0$
8. $\sqrt[n]{\frac{x}{y}} = \frac{\sqrt[n]{x}}{\sqrt[n]{y}}; x > 0; y > 0$

Factorización

1. $ab+ac=a(b+c)$
2. $ax+ay+bx+by=(a+b)(x+y)$
3. $x^2-y^2=(x+y)(x-y)$
4. $x^3+y^3=(x+y)(x^2-xy+y^2)$
5. $x^3-y^3=(x-y)(x^2+xy+y^2)$
6. $x^2+2xy+y^2=(x+y)^2$
7. $x^3+3x^2y+3xy^2+y^3=(x+y)^3$

Solución de la ecuación cuadrática

$$ax^2 + bx + c = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Geometría

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|---------------|--|-----------------------------|
| 1. Círculo | $P = 2\pi r$ | $A = \pi r^2$ |
| 2. Rectángulo | $P = 2l + 2w$ | $A = lw$ |
| 3. Cono | $A = \pi r^2 + \pi r \sqrt{r^2 + h^2}$ | $V = \frac{1}{3} \pi r^2 h$ |
| 4. Esfera | $A = 4\pi r^2$ | $V = \frac{4}{3} \pi r^3$ |
| 5. Caja | $A = 2(hl + lw + hw)$ | $V = lwh$ |
| 6. Cilindro | $A = 2\pi r^2 + 2\pi rh$ | $V = \pi r^2 h$ |

Trigonometría

1. $\cot A = \frac{1}{\tan A}$
2. $\sec A = \frac{1}{\cos A}$
3. $\csc A = \frac{1}{\sen A}$
4. $\tan A = \frac{\sen A}{\cos A}$
5. $\cot A = \frac{\cos A}{\sen A}$
6. $\sen^2 A + \cos^2 A = 1$
7. $1 + \tan^2 A = \sec^2 A$
8. $1 + \cot^2 A = \csc^2 A$
9. $\sen(A \pm B) = \sen A \cos B \pm \cos A \sen B$
10. $\cos(A \pm B) = \cos A \cos B \mp \sen A \sen B$
11. $\tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$
12. $\sen 2A = 2 \sen A \cos A$
13. $\cos 2A = \cos^2 A - \sen^2 A$
14. $\sen^2 A = \frac{1 - \cos 2A}{2}$
15. $\cos^2 A = \frac{1 + \cos 2A}{2}$

Geometría analítica

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|-------------------|---|
| 1. Recta | $y = mx + b$ |
| 2. Parábola H | $(y-k)^2 = 4p(x-h)$ |
| 3. Parábola V | $(x-h)^2 = 4p(y-k)$ |
| 4. Circunferencia | $(x-h)^2 + (y-k)^2 = r^2$ |
| 5. Elipse H | $\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1$ |
| 6. Elipse V | $\frac{(x-h)^2}{b^2} + \frac{(y-k)^2}{a^2} = 1$ |
| 7. Hipérbola H | $\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1$ |
| 8. Hipérbola V | $\frac{(y-k)^2}{a^2} - \frac{(x-h)^2}{b^2} = 1$ |