

**PREUNIVERSITARIO: INGRESO A LA UNIVERSIDAD**  
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**BINOMIO DE NEWTON**

$$(a + b)^n = a^n + na^{n-1}b + \frac{n(n-1)}{2} a^{n-2}b^2 + \frac{n(n-1)(n-2)}{2 \cdot 3} a^{n-3}b^3 + \dots + b^n$$

$$(a + b)^2 = a^2 + 2ab + b^2 \quad (a - b)^2 = a^2 - 2ab + b^2$$

$$(a + b)^3 = a^3 + 3a^2b + 3ab^2 + b^3 \quad (a - b)^3 = a^3 - 3a^2b + 3ab^2 - b^3$$

**PRODUCTOS NOTABLES Y FACTORIZACION**

$$a(x + y) = ax + ay \quad a(x - y) = ax - ay \quad (x + y)(x - y) = x^2 - y^2$$

$$(x + y)(x^2 - xy + y^2) = x^3 + y^3 \quad (x - y)(x^2 + xy + y^2) = x^3 - y^3$$

$$(x + a)(x + b) = x^2 + (a + b)x + ab \quad (ax + b)(cx + d) = acx^2 + (ad + bc)x + bd$$

$$x^2 + ax + b = (x + n_1)(x + n_2), a = n_1 + n_2, b = n_1n_2$$

**POTENCIACION**

$$(xy)^n = x^n y^n$$

$$(x^m)^n = x^{mn}$$

$$\left(\frac{x}{y}\right)^n = \frac{x^n}{y^n}$$

$$x^m x^n = x^{m+n}$$

$$\frac{x^m}{x^n} = x^{m-n}$$

$$x^{\frac{m}{n}} = \sqrt[n]{x^m}$$

$$x^{-n} = \frac{1}{x^n}, x \neq 0$$

$$x^{-1} = \frac{1}{x}, x \neq 0$$

$$\left(\frac{x}{y}\right)^{-1} = \frac{y}{x}$$

$$x^0 = 1$$

$$\frac{0}{a} = 0, \text{ si } a \neq 0$$

$$\frac{a}{0} = \text{no definido}$$

$$\frac{0}{0} = \text{indeterminado}$$

**RADICACIÓN**

$$\sqrt[n]{a} \sqrt[n]{b} = \sqrt[n]{ab}$$

$$\sqrt[n]{\frac{a}{b}} = \frac{\sqrt[n]{a}}{\sqrt[n]{b}}$$

$$\sqrt[m]{\sqrt[n]{a}} = \sqrt[mn]{a}$$

$$\sqrt[n]{a} \sqrt[m]{b} = \sqrt[nm]{a^m b^n}$$

$$\left(\sqrt[m]{a^n}\right)^p = \sqrt[m]{a^{np}}$$

$$\sqrt[n]{a^n} = a^{\frac{n}{n}} = a$$

**PROGRESIÓN ARITMÉTICA**

$$a_n = a_1 + (n-1)r$$

$$s_n = \left(\frac{a_1 + a_n}{2}\right) \cdot n$$

**PROGRESIÓN GEOMÉTRICA**

$$a_n = a_1 r^{n-1}$$

$$s_n = \frac{1 - r^n}{1 - r} \cdot a_1$$

**LOGARITMOS**

$$\text{Log}_a x = y \Leftrightarrow x = a^y$$

$$\text{Log}_a 0 = 1$$

$$\text{Log}_a a = 1$$

$$\text{Log}_a 0 \text{ no existe}$$

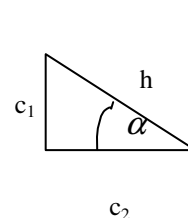
$$\text{Log}(a \cdot b) = \text{log } a + \text{log } b$$

$$\text{Log}\left(\frac{a}{b}\right) = \text{log } a - \text{log } b$$

$$\text{log}(a^n) = n \cdot \text{Log } a$$

$$\text{log } \sqrt[n]{a} = \frac{1}{n} \text{log } a$$

**TRIGONOMETRIA**



$$\text{Sen } \alpha = \frac{c_1}{h}$$

$$\text{Cos } \alpha = \frac{c_2}{h}$$

$$\text{Tan } \alpha = \frac{c_1}{c_2}$$

$$\text{Cot } \alpha = \frac{c_2}{c_1}$$

$$\text{Sec } \alpha = \frac{h}{c_2}$$

$$\text{Csc } \alpha = \frac{h}{c_1}$$