POLINOMIOS DE USO FRECUENTE

$f(x) = \frac{1}{1-x}$
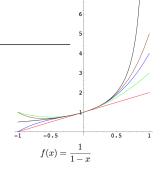
1. **Exponencial**

$$e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \cdots + \frac{x^n}{n!} + \frac{e^{\mathbf{Z}} x^{n+1}}{(n+1)!}, \qquad \mathbf{Z} \in V(0,x)$$

2. **Logarítmica**

$$\ln(x+1) = x - \frac{x^2}{2} + \frac{x^3}{3} + \cdots + \frac{(-1)^{n-1} x^n}{n} + \frac{(-1)^n x^{n+1}}{(n+1)(1+\mathbf{Z})^{n+1}}, \qquad \mathbf{Z} \in V(0,x)$$

3. **Geométrica**

$$\frac{1}{1-x} = 1 + x + x^2 + \cdots + x^n + \frac{x^{n+1}}{(1-\mathbf{Z})^{n+2}}, \qquad \mathbf{Z} \in V(0,x)$$

4. **Trigonométrica**

$$\operatorname{sen}(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} + \cdots + \frac{(-1)^n x^{2n+1}}{(2n+1)!} + \frac{(-1)^{n+1}\cos(\mathbf{Z})}{(2n+3)!} x^{2n+3}, \qquad \mathbf{Z} \in V(0,x)$$

$$\cos(x) = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} + \cdots + \frac{(-1)^n x^{2n}}{(2n)!} + \frac{(-1)^{n+1}\cos(\mathbf{Z})}{(2n+2)!} x^{2n+2}, \qquad \mathbf{Z} \in V(0,x)$$

5. **Hiperbólicas**

$$\operatorname{senh}(x) = x + \frac{x^3}{3!} + \frac{x^5}{5!} + \cdots + \frac{x^{2n+1}}{(2n+1)!} + \frac{\cosh(\mathbf{Z})}{(2n+3)!} x^{2n+3}, \qquad \mathbf{Z} \in V(0,x)$$

$$\cosh(x) = 1 + \frac{x^2}{2!} + \frac{x^4}{4!} + \cdots + \frac{x^{2n}}{(2n)!} + \frac{\cosh(\mathbf{Z})}{(2n+2)!} x^{2n+2}, \qquad \mathbf{Z} \in V(0,x)$$

6. **Tangentes inversas**

$$\arctan(x) = x - \frac{x^3}{3} + \frac{x^5}{5} - \cdots + \frac{(-1)^n x^{2n+1}}{2n+1} + \frac{(-1)^{n+1} x^{2n+3}}{(2n+3)(1+\mathbf{Z})^{n+2}}, \quad \mathbf{Z} \in V(0,x^2)$$

$$\operatorname{arctanh}(x) = x + \frac{x^3}{3} + \frac{x^5}{5} + \cdots + \frac{x^{2n+1}}{2n+1} + \frac{x^{2n+3}}{(2n+3)(1-\mathbf{Z})^{n+2}}, \qquad \mathbf{Z} \in V(0,x^2)$$

7. **Binomial**

$$(1+x)^\alpha = 1 + \alpha x + \alpha(\alpha-1)\frac{x^2}{2!} + \ldots + \left[\alpha \cdots (\alpha-n+1)\right]\frac{x^n}{n!} + \frac{\left[\alpha \cdots (\alpha-n)\right] x^{n+1}}{(1+\mathbf{Z})^{n+1-\alpha}(n+1)!}, \quad \mathbf{Z} \in V(0,x)$$