

Desarrollos de algunas funciones (02.11.2017)

Desarrollo	Campo de validez
1. $(1 - x)^{-1} = 1 + x + x^2 + x^3 + x^4 + \dots$	$-1 < x < 1$
2. $(1 + x)^{-1} = 1 - x + x^2 - x^3 + x^4 - \dots$	$-1 < x < 1$
3. $e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^4}{4!} + \dots$	$-\infty < x < \infty$
4. $a^x = e^{x \ln a} = 1 + x \ln a + \frac{(x \ln a)^2}{2!} + \frac{(x \ln a)^3}{3!} + \dots$	$-\infty < x < \infty$
5. $\ln(1 + x) = x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \dots$	$-1 < x \leq 1$
6. $\text{sen } x = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots$	$-\infty < x < \infty$
7. $\text{cos } x = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \dots$	$-\infty < x < \infty$
8. $\text{tg } x = x + \frac{x^3}{3} + \frac{2x^5}{15} + \frac{17x^7}{315} + \dots$	$ x < \frac{\pi}{2}$
9. $\text{arc sen } x = x + \frac{1}{2} \frac{x^3}{3} + \frac{1 \cdot 3}{2 \cdot 4} \frac{x^5}{5} + \frac{1 \cdot 3 \cdot 5}{2 \cdot 4 \cdot 6} \frac{x^7}{7} + \dots$	$ x < 1$
10. $\text{arc cos } x = \frac{\pi}{2} - \text{arc sen } x = \frac{\pi}{2} - \left(x + \frac{1}{2} \frac{x^3}{3} + \frac{1 \cdot 3}{2 \cdot 4} \frac{x^5}{5} + \dots \right)$	$ x < 1$
11. $\text{arc tg } x = x - \frac{x^3}{3} + \frac{x^5}{5} - \frac{x^7}{7} + \dots$	$ x < 1$
12. $\text{arc tg } x = \pm \frac{\pi}{2} - \frac{1}{x} + \frac{1}{3x^3} - \frac{1}{5x^5} + \dots$	$+ \text{ con } x \geq 1; - \text{ con } x \leq -1$
13. $\text{senh } x = x + \frac{x^3}{3!} + \frac{x^5}{5!} + \frac{x^7}{7!} + \dots$	$-\infty < x < \infty$
14. $\text{cosh } x = 1 + \frac{x^2}{2!} + \frac{x^4}{4!} + \frac{x^6}{6!} + \dots$	$-\infty < x < \infty$