Taylor expansions

- $\frac{1}{1-x} = 1 + x + x^2 + x^3 + ... = \sum_0^\infty x^n, |x| < 1$
- $\frac{1}{1+x} = 1 - x + x^2 - x^3 + ... = \sum_0^\infty (-x)^n, |x| < 1$
- $e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + ... = \sum_0^\infty \frac{x^n}{n!}, x \in \mathbb{R}$
- $\sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} + ... = \sum_0^\infty (-1)^n \frac{x^{2n+1}}{(2n+1)!}, x \in \mathbb{R}$
- $\cos(x) = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} + ... = \sum_0^\infty (-1)^n \frac{x^{2n}}{(2n)!}, x \in \mathbb{R}$
- $\log(1+x) = x - \frac{x^2}{2} + \frac{x^3}{3} + ... = \sum_1^\infty (-1)^{n+1} \frac{x^n}{n}, |x| < 1$
- $\arctan(x) = x - \frac{x^3}{3} + \frac{x^5}{5} + ... = \sum_0^\infty (-1)^n \frac{x^{2n+1}}{2n+1}, |x| \leq 1$
  $\int \frac{1}{1+x^2}$