

> restart;  
 > series (exp (x) , x=a) ;

$$e^a + e^a (x-a) + \frac{1}{2} e^a (x-a)^2 + \frac{1}{6} e^a (x-a)^3 + \frac{1}{24} e^a (x-a)^4 + \frac{1}{120} e^a (x-a)^5 + O((x-a)^6) \quad (1)$$

> series (ln (x) , x=1) ;

$$x-1 - \frac{1}{2} (x-1)^2 + \frac{1}{3} (x-1)^3 - \frac{1}{4} (x-1)^4 + \frac{1}{5} (x-1)^5 + O((x-1)^6) \quad (2)$$

> series (ln (1+y) , y=0) ;

$$y - \frac{1}{2} y^2 + \frac{1}{3} y^3 - \frac{1}{4} y^4 + \frac{1}{5} y^5 + O(y^6) \quad (3)$$

> S1:=series (sin (x) , x=0, 8) ;

$$S1 := x - \frac{1}{6} x^3 + \frac{1}{120} x^5 - \frac{1}{5040} x^7 + O(x^9) \quad (4)$$

> S2:=series (cos (x) , x=0, 8) ;

$$S2 := 1 - \frac{1}{2} x^2 + \frac{1}{24} x^4 - \frac{1}{720} x^6 + O(x^8) \quad (5)$$

> S1+S2 ;

$$\left( x - \frac{1}{6} x^3 + \frac{1}{120} x^5 - \frac{1}{5040} x^7 + O(x^9) \right) + \left( 1 - \frac{1}{2} x^2 + \frac{1}{24} x^4 - \frac{1}{720} x^6 + O(x^8) \right) \quad (6)$$

> series (S1+S2 , x, 8) ;

$$1 + x - \frac{1}{2} x^2 - \frac{1}{6} x^3 + \frac{1}{24} x^4 + \frac{1}{120} x^5 - \frac{1}{720} x^6 - \frac{1}{5040} x^7 + O(x^8) \quad (7)$$

> series (S1\*S2 , x, 8) ;

$$x - \frac{2}{3} x^3 + \frac{2}{15} x^5 - \frac{4}{315} x^7 + O(x^9) \quad (8)$$