

>  
實習13.1

> `taylor(exp(x), x=0, 4)`

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

> `p3 := convert(%, polynomial)`

$$p3 := 1 + x + \frac{1}{2} x^2 + \frac{1}{6} x^3 \quad (2)$$

> `taylor(exp(x), x=0, 7)`

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

> `p6 := convert(%, polynomial)`

$$p6 := 1 + x + \frac{1}{2} x^2 + \frac{1}{6} x^3 + \frac{1}{24} x^4 + \frac{1}{120} x^5 + \frac{1}{720} x^6 \quad (4)$$

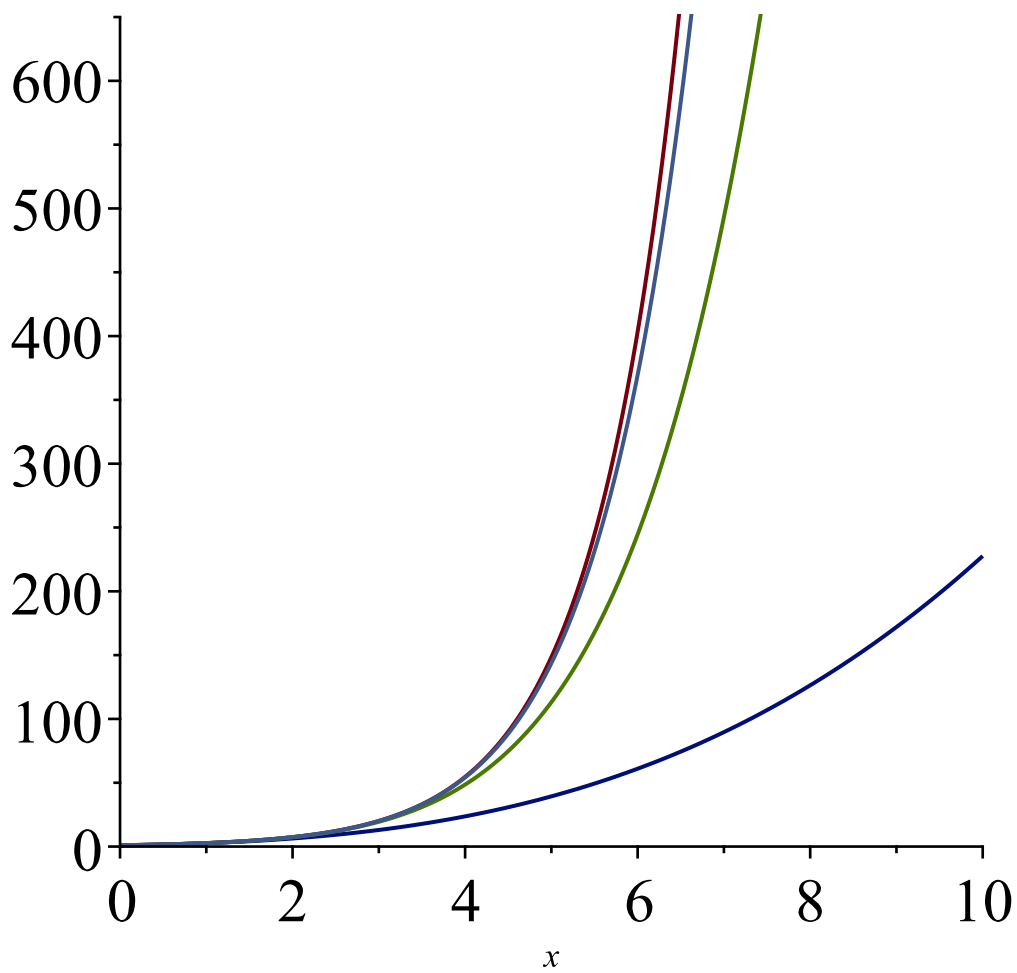
> `taylor(exp(x), x=0, 10)`

$$1 + x + \frac{1}{2} x^2 + \frac{1}{6} x^3 + \frac{1}{24} x^4 + \frac{1}{120} x^5 + \frac{1}{720} x^6 + \frac{1}{5040} x^7 + \frac{1}{40320} x^8 \\ + \frac{1}{362880} x^9 + O(x^{10}) \quad (5)$$

> `p9 := convert(%, polynomial)`

$$p9 := 1 + x + \frac{1}{2} x^2 + \frac{1}{6} x^3 + \frac{1}{24} x^4 + \frac{1}{120} x^5 + \frac{1}{720} x^6 + \frac{1}{5040} x^7 + \frac{1}{40320} x^8 \\ + \frac{1}{362880} x^9 \quad (6)$$

> `plot([exp(x), p3, p6, p9], x=0..10, legend=["exp(x)", "p3", "p6", "p9"])`



— exp(x) — p3 — p6 — p9

