The exponential function

- Explain why we can write real numbers as $\sum_{n=1}^{\infty} a_n(\delta t)^n$? When we use this representation when writing decimals what is the value of δt

- Give the definition of the derivative as a limit

- Show from first principles (i.e. by solving the limit that you just wrote down) that the first derivative of x^4 with respect to x is $4x^3$.

- Give the Taylor series expansion of a function

The exponential function

- Write down the Taylor series expansion for the exponential function e^x.

- Explain, by making reference to the properties of the Taylor series of this function, why the exponential function is so useful.