**2C Maclaurin Series**

1. Given that f(x) = ex can be written in the form:

And that it is valid to differentiate an infinite series term by term, show that:

Generalising:

1. Express ln(1 + x) as an infinite series in ascending powers of x, up to and including the term in x3
2. Using this series, find approximate values for:
3. ln(1.05)
4. ln(1.25)
5. ln(1.8)
6. Find the Maclaurin expansion for sinx, up to the term in x5. Then use your expansion to find an approximation for sin10˚.
7. Find the Maclaurin expansion for cosx, up to the term in x4.
8. Proving Euler’s relation: