**2B Higher Derivatives for Maclaurin Series**

1. Given that:

$$y=ln\left(1-x\right)$$

Find the value of:

$$\left(\frac{d^{3}y}{dx^{3}}\right)\_{\frac{1}{2}}$$

1. Given that:

$$f\left(x\right)=e^{x^{2}}$$

1. Show that:

$$f'\left(x\right)=2xf(x)$$

1. By differentiating the result twice more with respect to x, find f’’(x) and f’’’(x)
2. Deduce the values of f(0), f’(0), f’’(0) and f’’’(0)