Proof – 2022 GCE Pure Core 1 Further Math A Y540

1. June/2022/Paper_ Y540/01/No.6

Let $y = x \cosh x$.

Prove by induction that, for all integers $n \geqslant 1$, $\dfrac{\mathrm{d}^{2n-1}y}{\mathrm{d}x^{2n-1}} = x \sinh x + (2n-1)\cosh x$. **[6]**