Infinitesimal Calculus 2 Units 4 and 5

Optional exercise 5 May 2023

REMARK: The exercise should start in this page.

 ${\bf 1.-}$ Consider the following power series:

$$\sum_{n=1}^{\infty} a_n x^n; \qquad a_n = \cosh(n)$$

- a) Determine the radius and interval of convergence.
- **b)** Find the sum of the series.

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- **2.** Let $\mathbb C$ be the set of complex numbers.
 - a) Given $z \in \mathbb{C}$, find all complex numbers \hat{z} such that some of the *n*th roots of z are also *n*th roots of \hat{z} .
 - b) Solve the equation $z^3 \bar{z} + 1 = 0$.