Exercise 1. What is the largest circle within which the Taylor series at $z_0 = 0$ for the function $\tanh z$ converges to $\tanh z$? Find the first two nonzero terms of this series.

Exercise 2. Prove that $\sinh z = \displaystyle\sum_{n=0}^{\infty} \frac{z^{2n+1}}{(2n+1)!}$ for all $z \in \mathbb{C}$.

Exercise 3. Determine the orders of all of the zeros of $f(z) = z \sin(z^2)$.

Exercise 4. What is the order of the zero of $f(z) = e^{z^3} - 1 - z^3$ at the origin?