

Answer on the Question #50233, Math, Complex Analysis

Given:

$$f(z) = e^{z^2+2z-3} \quad z_0 = -1$$

Solution:

$$\begin{aligned} f(z) &= \frac{e^{z^2} \cdot e^{2z}}{e^3} = \frac{1}{e^3} \cdot e^{z^2-1+1} \cdot e^{2z+2-2} = \frac{1}{e^3} \cdot e \cdot e^{z^2-1} \cdot e^{-2} \cdot e^{2z+2} = \frac{1}{e^4} \cdot \sum_{n=0}^{\infty} \frac{(z^2-1)^n}{n!} \cdot \sum_{n=0}^{\infty} \frac{(2z+2)^n}{n!} = \\ &= \frac{1}{e^4} \cdot \sum_{n=0}^{\infty} \left(\sum_{k=0}^n \frac{(z^2-1)^k}{k!} \cdot \frac{(2z+2)^{n-k}}{(n-k)!} \right) \end{aligned}$$

Answer: $\frac{1}{e^4} \cdot \sum_{n=0}^{\infty} \left(\sum_{k=0}^n \frac{(z^2-1)^k}{k!} \cdot \frac{(2z+2)^{n-k}}{(n-k)!} \right)$

www.assignmentexpert.com