5. [12 points] The Taylor series centered at x = -1 for a function f(x) is given by:

$$f(x) = \sum_{n=0}^{\infty} \frac{9^n (n!)^2}{(2n+1)!} (x+1)^{2n+1}$$

a. [7 points] Determine the radius of convergence of the Taylor series above. Show all of your work. You do **not** need to find the interval of convergence.

Answer:

b. [5 points] Find $f^{(2025)}(-1)$ and $f^{(2026)}(-1)$. You do not need to simplify your answers.