MATH 202, Fall 2023 **Name:** _____
Exam 4 Practice **Row and Seat**: _____

"We seem to understand the value of oil, timber, minerals and housing, but not the value of unspoiled beauty, wildlife, solitude and spiritual renewal."

CALVIN (BILL WATERSON)

1. Find the radius of convergence of each power series

   (a) $\sum_{k=0}^{\infty} k!x^k$

   (b) $\sum_{k=0}^{\infty} \frac{5k+1}{7k+2}(x-1)^k$

(c) $\sum_{k=0}^{\infty} \frac{(3k)!}{(k!)^3} \left(\frac{x}{5}\right)^k$

2. Find a power series representation for the function $G(x) = \int_0^x \exp(-t^4)\,\mathrm{d}t$. Also, find the radius of convergence of this power series.

3. Determine if each series converges or diverges.

   (a) $\sum_{k=0}^{\infty} \frac{1}{1+k^4}$

(b) $\sum_{k=0}^{\infty}(-1)^k \frac{1}{1+k}$

(c) $\sum_{k=0}^{\infty} \frac{\sin(k)}{1+k^2}$