Question 1. *Determine the radius of convergence of the power series* $\displaystyle\sum_{n=0}^{\infty} n!x^n$.

Question 2. *Determine the radius of convergence of the power series* $\displaystyle\sum_{n=0}^{\infty} x^{2^n}$.

Question 3. *Determine the radius of convergence of the power series* $\displaystyle\sum_{n=1}^{\infty} \frac{z^n}{n^2}$.

Question 4. *Determine the interval of convergence of the power series* $\displaystyle\sum_{n=0}^{\infty} \frac{(-1)^n x^{2n+1}}{(2n+1)3^n}$.

Question 5. *Find the sum of the power series* $\displaystyle\sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)2^{2n+1}}$.