

**1** Determine the series

5 points

$$\sum_{n=1}^{\infty} (-1)^n \frac{n!}{n^n}$$

is converges absolutely, converges conditionally, or diverges.

**2** Find the radius of convergence of the series

5 points

$$\sum_{n=2}^{\infty} \left( \frac{n-1}{n} \right)^{n^2} x^n$$