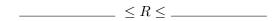
- **2**. [4 points]
 - **a.** [2 points] You are given that the power series $\sum_{n=0}^{\infty} C_n(x+3)^n$ converges when x=-6 and diverges when x=1. What are the largest and smallest possible values for the radius of convergence R?



b. [2 points] Give the exact value of the infinite series $\sum_{n=0}^{\infty} \frac{(-1)^{n+1} 3^{n+1}}{n!} = -3 + 9 - \frac{27}{2} + \frac{81}{6} - \frac{243}{24} + \cdots$

3. [5 points] Determine whether the following integral converges or diverges. If the integral converges, circle the word "converges". If the integral diverges, circle "diverges". In either case, you must show all your work and indicate any theorems you use.

$$\int_0^1 \frac{\cos(x)}{x^2} \, dx$$

CONVERGES

DIVERGES