10.13 Radius and Interval of Convergence

Calculus   Name: _____

Find the interval of convergence for each power series.

1. $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^n(x+5)^n}{n}$

2. $\displaystyle\sum_{n=0}^{\infty} \frac{(-1)^n x^{2n}}{n!}$

3. What is the radius of convergence of the power series $\displaystyle\sum_{n=0}^{\infty} \frac{(x-4)^n}{4^n}$?

4. What is the interval of convergence for the power series $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^{n+1}(x-4)^n}{nk^n}$, where k is a positive integer?

5. If the power series $\displaystyle\sum_{n=0}^{\infty} a_n(x-1)^n$ converges at $x = 7$ and diverges at $x = -5$, which of the following must be true?

    I.   The series converges at $x = 6$.

    II. The series is centered at $x = 1$.

    III. $x = 7$ is an endpoint

    (A) I only   (B) II only   (C) I and II only   (D) I, II, and III

1. $-6 < x \le -4$	2. $-\infty < x < \infty$	3. 4	4. $4 - k < x \le 4 + k$	5. D