10.8 Ration Test

Calculus Name: ______________________________ **CA #1**

1. Use the Ratio Test to determine the convergence or divergence of the series $\sum_{n=1}^{\infty} \frac{n^4}{3^n}$.

2. If the Ratio Test is applied to the series $\sum_{n=0}^{\infty} \frac{6^n}{(n+1)^n}$, which of the following inequalities results, implying that the series converges?

A. $\lim_{n\to\infty} \frac{6^n}{(n+1)^n} < 1$ B. $\lim_{n\to\infty} \frac{6(n+1)^n}{(n+2)^{n+1}} < 1$ C. $\lim_{n\to\infty} \frac{6^{n+1}}{(n+1)^n} < 1$ D. $\lim_{n\to\infty} \frac{6^{n+1}}{(n+1)^{n+1}} < 1$

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3. If $a_n > 0$ for all n and $\lim_{n\to\infty} \frac{a_{n+1}}{a_n} = 5$, which of the following series converges?

A. $\sum_{n=1}^{\infty} \frac{a_n}{n^2}$ B. $\sum_{n=1}^{\infty} \frac{a_n}{2^n}$ C. $\sum_{n=1}^{\infty} \frac{a_n}{n^5}$ D. $\sum_{n=1}^{\infty} \frac{a_n}{7^n}$

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4. What are all values of $x > 0$ for which the series $\sum_{n=1}^{\infty} \frac{6n^3}{x^n}$ converges?

5. Which of the following series converge?

I. $\sum_{n=1}^{\infty} \frac{1}{n!}$ II. $\sum_{n=1}^{\infty} \frac{9^n}{n^5}$ III. $\sum_{n=1}^{\infty} \frac{5n}{2n-1}$

A. I only B. I and II only C. I and III only D. I, II, and III

1. Converges by Ratio Test	2. B	3. D	4. $x > 1$	5. A

Answers to 10.8 CA #1