

10. Infinite Sequences and Series

Starter Quiz · 课前小测

AP Calculus BC

Name: _____ Score: _____

1. The value of an infinite series is defined as the limit of its...

- ☐ terms
- ☐ partial sums
- ☐ ratios
- ☐ derivatives

2. A geometric series $\sum ar^n$ converges exactly when...

- ☐ $|r| < 1$
- ☐ $|r| > 1$
- ☐ $r > 0$
- ☐ $a < 1$

3. If $\lim_{n \rightarrow \infty} a_n \neq 0$, then $\sum a_n$...

- ☐ converges
- ☐ diverges
- ☐ could be either
- ☐ equals 0

4. The Integral Test requires f to be **which** on $[1, \infty)$?

- ☐ positive
- ☐ continuous
- ☐ decreasing
- ☐ a polynomial

Tick every correct option.

5. The p-series $\sum \frac{1}{n^p}$ converges exactly when...

- ☐ $p > 1$
- ☐ $p < 1$
- ☐ $p \geq 0$
- ☐ $p = 1$

6. If $0 \leq a_n \leq b_n$ and $\sum b_n$ converges, then $\sum a_n$...

- ☐ diverges

- ☐ converges
- ☐ is inconclusive
- ☐ equals $\sum b_n$

7. The Alternating Series Test requires the positive terms b_n to be **which**?

- ☐ decreasing
- ☐ tending to 0
- ☐ all equal
- ☐ a p-series

Tick every correct option.

8. The partial sums of $1 + \frac{1}{2} + \frac{1}{4} + \dots$ climb toward what limit?

9. Approximating $1 - \frac{1}{2} + \frac{1}{3} - \dots$ with 3 terms, the error bound is the next term b_4 . What is it?

10. For $\sum \frac{x^n}{n}$, the Ratio Test gives $|x| < 1$. What is R ?

AP Calculus BC1. **partial sums**

$$\sum a_n = \lim_{n \rightarrow \infty} S_n.$$

2. $|r| < 1$

Converges iff the ratio is a fraction, $|r| < 1$.

3. **diverges**

Nonzero term limit $\rightarrow$ divergence.

4. **positive; continuous; decreasing**

Positive, continuous, decreasing — not necessarily a polynomial.

5. $p > 1$

Converges iff $p > 1$.

6. **converges**

Smaller than a convergent series $\rightarrow$ converges.

7. **decreasing; tending to 0**

Decreasing and limit 0.

8. **2**

A geometric series with ratio $\frac{1}{2}$ sums to 2.

9. **0.25**

$$b_4 = \frac{1}{4} = 0.25.$$

10. **1**

$$R = 1.$$