

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  $\sum a_n \dots$

- ☐ 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  $\sum a_n \dots$

- ☐ 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  $1 + \frac{1}{2} + \frac{1}{4} + \cdots$  climb toward what limit?

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

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

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1. **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**

$$R = 1.$$