Fill in the blanks.

1. A geometric series \( \sum_{n=0}^{\infty} ar^{n-1} \) converges if and only if \( |r| < 1 \).

2. A series \( \sum_{n=1}^{\infty} a_n \) converges to the sum \( S \) if and only if
   the sequence of partial sums \( \{S_n\} \) converges to \( S \).

3. Given a series \( \sum_{n=1}^{\infty} a_n \) and discrete function \( f(n) = a_n \) which is extended to the function \( f(x) \), the three conditions which \( f(x) \) must meet in order to use the integral test are that \( f(x) \) is continuous, eventually positive and decreasing.

4. A \( p \)-series \( \sum_{n=1}^{\infty} \frac{1}{n^p} \) converges if and only if \( p > 1 \).

5. The (ordinary) comparison test can be used to show that the series \( \sum_{n=1}^{\infty} a_n \) diverges if a divergent series \( \sum_{n=1}^{\infty} b_n \) can be found with \( 0 \leq b_n \leq a_n \) for all \( n \geq N \).
Fill in the blanks.

1. A series $\sum_{n=1}^{\infty} a_n$ converges to the sum $S$ if and only if
   the sequence of partial sums $\{S_n\}$ converges to $S$.

2. Given a series $\sum_{n=1}^{\infty} a_n$ and discrete function $f(n) = a_n$ which is extended to the function $f(x)$, the
   three conditions which $f(x)$ must meet in order to use the integral test are that $f(x)$ is continuous,
   positive, and eventually decreasing.

3. A $p$-series $\sum_{n=1}^{\infty} \frac{1}{n^p}$ diverges if and only if $p \leq 1$.

4. A geometric series $\sum_{n=1}^{\infty} ar^{n-1}$ converges if and only if $|r| < 1$.

5. The (ordinary) comparison test can be used to show that the series $\sum_{n=1}^{\infty} a_n$ converges
   if a convergent series $\sum_{n=1}^{\infty} b_n$ can be found with $0 \leq a_n \leq b_n$ for all $n \geq N$. 