

Worksheet: The n th Term Divergence Test



Q1: True or False: If $a_n \rightarrow 0$ as $n \rightarrow \infty$, then $\sum_{n=0}^{\infty} a_n$ is convergent.

A true

B false

Q2: What can we conclude by applying the n th term divergence test in the series $\sum_{n=1}^{\infty} \frac{(5n+3)^{2n}}{(7n^2+2)^n}$?

A The series diverges.

B The divergence test is inconclusive.

Q3: What can we conclude by applying the n th term divergence test in the series $\sum_{n=1}^{\infty} \frac{3n}{\sqrt{6n^2+4n+5}}$?

A The series diverges.

B The divergence test is inconclusive.

Q4: What can we conclude by applying the n th term divergence test in the series $\sum_{n=1}^{\infty} 3 \cos n$?

A The divergence test is inconclusive.

B The series diverges.

Q5: What can we conclude by applying the n th term divergence test in the series $\sum_{n=1}^{\infty} \frac{2 \ln n}{3n}$?

A The series converges.

B The divergence test is inconclusive.

Q6: What can we conclude by applying the n th term divergence test in the series $\sum_{n=1}^{\infty} \frac{2n}{6n^2 + 4}$?

A The divergence test is inconclusive.

B The series diverges.

Q7: True or False: If $a_n \rightarrow 0$ as $n \rightarrow \infty$, then the n th term divergence test fails for $\sum_{n=0}^{\infty} a_n$.

A True

B False

Q8: Using the n th term test, determine whether the series $\sum_{n=0}^{\infty} \frac{n}{n^2 + 1}$ is divergent or the test fails.

A The test fails.

B The series is divergent.

Q9: Using the n th term test, determine whether the series $\sum_{n=0}^{\infty} \frac{4^n}{3^n}$ is divergent or the test fails.

A The test fails.

B The series is divergent.

Q10: Using the n th term test, determine whether the series $\sum_{n=1}^{\infty} \frac{(n+2)!}{(2n)!}$ is divergent or the test fails.

A The series is divergent.

B The test fails.