Infinite Sequences and Series

AP Calculus BC · Vocabulary in context

Word	Example
infinite series /ˈɪnfɪnət ˈsɪəriːz/	An **infinite series** adds up infinitely many terms.
limit /ˈlɪmɪt/	The terms of 1, ½, ¼, … get closer and closer to a **limit** of 0. 1, ½, ¼, … 0
partial sums /ˈpɑːʃl sʌmz/	The **partial sums** add up the first n terms. n
converges /kənˈvɜːdʒɪz/	The series 1 + ½ + ¼ + … **converges** to 2. 1 + ½ + ¼ + … 2
diverges /daɪˈvɜːdʒɪz/	The series 1 + 2 + 4 + 8 + … **diverges**, because its sum grows without limit. 1 + 2 + 4 + 8 + …
geometric series /ˌdʒiːəʊˈmetrɪk ˈsɪəriːz/	In a **geometric series**, each term is the previous one times r. r
ratio /ˈreɪʃiəʊ/	The **ratio** between terms in 1 + 1/2 + 1/4 + … is 1/2. 1 + 1/2 + 1/4 + … 1/2
inconclusive /ɪŋkənˈkluːsɪv/	If $f'' = 0$, the second-derivative test is **inconclusive**: it tells you nothing. $f'' = 0$
decreasing /ˈdiːkriːsɪŋ/	A sequence is **decreasing** if each term is smaller than the last.
integral test /ˈɪntɪgrəl test/	The **integral test** compares a series with an integral.
improper integral /ɪmˈprɒpə ˈɪntɪgrəl/	An **improper integral** has an infinite limit or an infinite value inside.
p-series /piː ˈsɪəriːz/	A **p-series** looks like $1/1^p + 1/2^p + 1/3^p + \ldots$. $1/1^p + 1/2^p + 1/3^p + \ldots$

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harmonic series /hɑːˈmɒnɪk ˈsɪəriːz/	The **harmonic series** 1 + 1/2 + 1/3 + … grows forever. 1 + 1/2 + 1/3 + …
direct comparison /daɪˈrekt kəmˈpærɪsn/	**Direct comparison** says a series smaller than a converging one also converges.
limit comparison /ˈlɪmɪt kəmˈpærɪsn/	**Limit comparison** compares two series by the limit of their ratio.
alternating series /ˈɔːltəneɪtɪŋ ˈsɪəriːz/	An **alternating series** switches between plus and minus.
ratio test /ˈreɪʃiəʊ test/	The **ratio test** looks at the limit of each term divided by the one before.
factorial /fækˈtɔːrɪəl/	The **factorial** of 4 is $4 \times 3 \times 2 \times 1 = 24$. 4 $4 \times 3 \times 2 \times 1 = 24$
converges absolutely /kənˈvɜːdʒɪz ˌæbsəˈluːtli/	A series **converges absolutely** when it converges even with all terms made positive.
converges conditionally /kənˈvɜːdʒɪz kənˈdɪʃənəli/	A series **converges conditionally** when it converges only because of the signs.
first omitted term	For an alternating series, the error is less than the **first omitted term**.
Taylor polynomial /ˈteɪlə ˌpɒlɪˈnəʊmɪəl/	A **Taylor polynomial** copies a function near one point.
center /ˈsentə/	The Taylor polynomial is built around a **center**, such as x = 1. x = 1
derivative /dɪˈrɪvətɪv/	Use the **derivative** to find the curve's slope at this point.

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Maclaurin polynomial /məˈklɔːrɪn ˌpɒlɪˈnəʊmɪəl/	A **Maclaurin polynomial** is a Taylor polynomial centred at 0. 0
degree /dɪˈgriː/	A higher **degree** gives a better approximation.
Lagrange error bound /ˈlægreɪndʒ ˈerə baʊnd/	The **Lagrange error bound** tells you the largest possible error.
power series /ˈpaʊə ˈsɪəriːz/	A **power series** is a polynomial that goes on forever.
radius of convergence /ˈreɪdɪəs ɒv kənˈvɜːdʒəns/	The **radius of convergence** says how far from the centre the series works.
endpoint	Check each **endpoint** separately.
interval of convergence /ˈɪntəvl ɒv kənˈvɜːdʒəns/	The **interval of convergence** lists all x where the series converges. x

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