

Started on

🗎 Saturday, 9 March 2024, 7:55 AM

State

→ Finished

Completed on

Time taken

Marks

Thursday, 14 March 2024, 2:58 PM

(5 days 7 hours

41.00/41.00

Grade

2 10.00 out of 10.00 (100%)

Question 1

Complete

Mark 1.00 out of 1.00

Write the first four elements of the sequence.

 $\sin(n\pi)$

- A. 0, 0, 0, 0
- B. 0, 1, 0, -1
- C. 1, 0, -1, 0
- D. 1, 1, 1, 1

A recursion formula and the initial term(s) of a sequence are given. Write out the first five terms of the sequence.

$$a_1 = 1, a_{n+1} = \frac{a_n}{n+3}$$

- A. $1, \frac{1}{4}, \frac{1}{20}, \frac{1}{120}, \frac{1}{840}$
- B. $1, \frac{1}{4}, \frac{1}{5}, \frac{1}{6}, \frac{1}{7}$
- C. $1, \frac{1}{4}, \frac{4}{5}, \frac{5}{6}, \frac{6}{7}$
- D. $1, \frac{1}{4}, 20, \frac{1}{120}, 840$

Find a formula for the nth term of the sequence.





 $0, \frac{2}{3}, 0, \frac{2}{3}, 0$ (alternating 0's and $\frac{2}{3}$'s)



Select one:



A.
$$a_n = \frac{1 + (-1)^{n+1}}{2 + (-1)^{n+1}}$$



B.
$$a_n = \frac{1 + (-1)^n}{2 + (-1)^n}$$



C.
$$a_n = \frac{1 - (-1)^n}{2 + (-1)^n}$$



D.
$$a_n = \frac{1 + (-1)^{n+1}}{2 - (-1)^{n+1}}$$

Question 4

Complete

Mark 1.00 out of 1.00

Find the limit of the sequence if it converges; otherwise indicate divergence.

$$a_n = (-1)^n \left[1 - \frac{9}{n} \right]$$

Select one:









D. Diverges

Find the limit of the sequence if it converges; otherwise indicate divergence.

$$a_n = \ln(7n - 7) - \ln(3n + 6)$$

Select one:

- A. ln 4
- B. $\ln \left(\frac{3}{7}\right)$
- D. Diverges

Question 6

Complete

Mark 1.00 out o<u>f 1.00</u>

Find the limit of the sequence if it converges; otherwise indicate divergence.

$$a_n = \left(1 + \frac{7}{n}\right)^n$$

- A. 1
- B. €
- \bigcirc C. e^7
- D. Diverges

Find the limit of the sequence if it converges; otherwise indicate divergence.

$$a_n = \frac{\tan^{-1} n}{\sqrt[6]{n}}$$

Select one:

- D. Diverges

Question 8

Complete

Mark 1.00 out of 1.00

Find the sum of the series.

$$\sum_{n=0}^{\infty} (-1)^n \frac{8}{9^n}$$

Find the sum of the series.

$$\sum_{n=1}^{\infty} (-1)^{n-1} \frac{2}{7^n}$$

Select one:

- _____ A.
- B. 1
- D. $\frac{7}{3}$

Question 10

Complete

Mark 1.00 out of 1.00

Use the nth-Term Test for divergence to show that the series is divergent, or state that the test is inconclusive.



- A. inconclusive
- B. converges, 9
- C. converges, 1
- D. diverges

Determine if the series converges or diverges. If the series converges, find its sum.



Select one:

- \triangle A. converges; $\frac{5}{3}$
- B. converges; $\frac{7}{9}$
- \bigcirc C. converges; $\frac{11}{9}$
- D. diverges

Question 12

Complete

Mark 1.00 out of 1.00

Determine if the series converges or diverges. If the series converges, find its sum.

$$\sum_{n=1}^{\infty} \left(\frac{1}{\ln(n+1)} - \frac{1}{\ln(n+2)} \right)$$

- A. converges; $\frac{1}{\ln 1}$
- B. converges; $\frac{1}{\ln 2}$
- C. converges; ln 2
- D. diverges

Determine if the series converges or diverges; if the series converges, find its sum.

$$\sum_{n=1}^{\infty} (-1)^{n-1} \frac{7}{9^n}$$

- A. Converges; $\frac{7}{10}$
- B. Converges; $\frac{1}{8}$
- \bigcirc C. Converges; $\frac{7}{8}$
- D. Diverges

Determine if the series converges or diverges; if the series converges, find its sum.



Select one:

- A. Converges; $\frac{1}{e^{-6}-1}$
- B. Converges; $\frac{e^{-6}}{e^{-6}-1}$
- C. Converges; $\frac{e^6}{e^6-1}$
- D. Diverges

Question 15

Complete

Mark 1.00 out of 1.00

Determine if the series converges or diverges; if the series converges, find its sum.

$$\sum_{n=0}^{\infty} \left(1 + \frac{5}{n}\right)^{-3n}$$

- A. Converges; $\frac{1}{|5|+1}$
- B. Converges; $\frac{1}{|5|-1}$
- C. Converges; e⁻¹⁵

Question 16

Complete

Mark 1.00 out of 1.00

Determine if the series converges or diverges; if the series converges, find its sum.



Select one:

- A. Converges; 1
- B. converges;



C. Converges; e



D. Diverges

Question 17

Complete

Mark 1.00 out of 1.00

Determine if the series converges or diverges; if the series converges, find its sum.



- A. Converges; 18
- B. Converges; 3
- C. Converges; 6
- D. Diverges

Determine if the series converges or diverges; if the series converges, find its sum.



Select one:

- A. Converges; $\frac{1}{6}$
- B. Converges; 8
- C. Converges; $\frac{7}{6}$
- D. Diverges

Question 19

Complete

Mark 1.00 out of 1.00

Use the integral test to determine whether the series converges.



- A. converges
- B. diverges

Use the integral test to determine whether the series converges.



Select one:

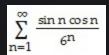
- A. diverges
- B. converges

Question 21

Complete

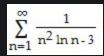
Mark 1.00 out of 1.00

Use the Comparison Test to determine if the series converges or diverges.



- A. converges
- B. diverges

Use the Comparison Test to determine if the series converges or diverges.



Select one:

- A. converges
- B. diverges

Question 23

Complete

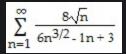
Mark 1.00 out of 1.00

Use the Comparison Test to determine if the series converges or diverges.



- - A. diverges
- B. converges

Determine if the series converges or diverges.



Select one:

- A. Converges
- B. Diverges

Question 25

Complete

Mark 1.00 out of 1.00

Determine if the series converges or diverges.

$$\sum_{n=2}^{\infty} \frac{1}{7 + 9n \ln(\ln n)}$$

- A. Diverges
- B. Converges

Use the Ratio Test to determine if the series converges or diverges.



Select one:



A. Diverges



B. Converges

Question 27

Complete

Mark 1.00 out of 1.00

Use the Ratio Test to determine if the series converges or diverges.



Select one:



A. Converges



B. Diverges

Use the Root Test to determine if the series converges or diverges.



Select one:

- A. Diverges
- B. Converges

Question 29

Complete

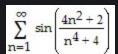
Mark 1.00 out of 1.00

Determine convergence or divergence of the series.

$$\sum_{n=1}^{\infty} \frac{5n+6}{\sqrt{2n^4+5n+7}}$$

- A. Diverges
- B. Converges

Determine convergence or divergence of the series.



Select one:

- A. Diverges
- B. Converges

Question 31

Complete

Mark 1.00 out of 1.00

Determine convergence or divergence of the alternating series.

$$\sum_{n=1}^{\infty} \frac{(-1)^n}{6n^4 + 7}$$

- A. Converges
- B. Diverges

Determine convergence or divergence of the alternating series.

$$\sum_{n=1}^{\infty} (-1)^{n+1} \frac{n + \sqrt{n}}{n^2 + 1}$$

Select one:

- A. Diverges
- B. Converges

Question 33

Complete

Mark 1.00 out of 1.00

Determine if the series converges absolutely, converges, or diverges.

$$\sum_{n=1}^{\infty} \frac{(-1)^n}{6n^{1/3} + 1}$$

- A. Converges conditionally
- B. diverges
- C. Converges absolutely

Determine if the series converges absolutely, converges, or diverges.



Select one:

- A. diverges
- B. converges absolutely
- C. converges conditionally

Question 35

Complete

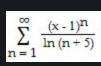
Mark 1.00 out of 1.00

Estimate the magnitude of the error involved in using the sum of the first four terms to approximate the sum of the entire series.

$$\sum_{n=1}^{\infty} (-1)^{n+1} \frac{1}{3^n}$$

- A. Error $< 1.37 \times 10^{-3}$
- B. $|Error| < 4.12 \times 10^{-3}$
- C. $|Error| < 1.23 \times 10^{-2}$
- D. Error $<\frac{1}{n}$

Find the series' radius of convergence.



Select one:

- **A**. 0
- B. 1
- C. 2
- D. ∞ for all x

Question 37

Complete

Mark 1.00 out of 1.00

Find the series' radius of convergence.

$$\sum_{n=1}^{\infty} \frac{(x-3)^n}{(2n)!}$$

- A. 2
- B. 1
- **C**. 0
- D. ∞ , for all x

Find the interval of convergence of the series.



Select one:

- A. $3 \le x \le 9$
- B. x < 9
- C. $5 \le x \le 7$
- D. -9 < x < 9

Question 39

Complete

Mark 1.00 out of 1.00

Find the Maclaurin series for the given function.

 e^{4x}

- A. $\sum_{n=0}^{\infty} \frac{4^n}{n}$
- $\sum_{n=0}^{\infty} \frac{(-1)^n 4^n x^n}{n!}$
- $\sum_{n=1}^{\infty} \frac{(-1)^n 4^n x^n}{n!}$
- - D.
- $\sum_{n'}^{\infty} \frac{4^n x^n}{n!}$

Find the Maclaurin series for the given function.

sin 4x

Select one:

- B. $\sum_{n=0}^{\infty} \frac{(-1)^n \, 4^{2n+1} \, x^{2n+1}}{n!}$
- C. $\sum_{n=0}^{\infty} \frac{(-1)^{2n+1} 4^{2n+1} x^{2n+1}}{(2n+1)!}$
- D. $\sum_{n=0}^{\infty} \frac{(-1)^n 4^{2n+1} x^{2n+1}}{(2n+1)!}$

Question 41

Complete

Mark 1.00 out of 1.00

Determine how many terms should be used to estimate the sum of the entire series with an error of less than 0.001.

$$\sum_{n=1}^{\infty} (-1)^n \frac{1}{5n^2 + 1}$$

- A. n≥31
- B. n ≥ 14
- C. n≥15

←

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University of Wollongong

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