This print-out should have 10 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

001 10.0 points

Determine whether the series

$$\sum_{n=0}^{\infty} 4\left(\frac{2}{3}\right)^n$$

is convergent or divergent, and if convergent, find its sum.

1. convergent, sum $= \frac{12}{5}$

2. convergent, sum $= 12$

3. divergent

4. convergent, sum $= -13$

5. convergent, sum $= 13$

002 10.0 points

Determine whether the infinite series

$$4 - 3 + \frac{9}{4} - \frac{27}{16} + \frac{81}{64} \cdots$$

is convergent or divergent, and if convergent, find its sum.

1. convergent with sum $\frac{7}{16}$

2. divergent

3. convergent with sum $\frac{16}{7}$

4. convergent with sum 16

5. convergent with sum $\frac{1}{16}$

003 10.0 points

Determine whether the series

$$2 + 3 + \frac{9}{2} + \frac{27}{4} + \cdots$$

is convergent or divergent, and if convergent, find its sum.

1. convergent with sum $= 9$

2. convergent with sum $= \frac{1}{4}$

3. convergent with sum $= 4$

4. divergent

5. convergent with sum $= \frac{1}{9}$

004 10.0 points

Determine if the series

$$\sum_{n=1}^{\infty} \frac{1+2^n}{4^n}$$

converges or diverges, and if it converges, find its sum.

1. converges with sum $= \frac{3}{2}$

2. converges with sum $= \frac{11}{6}$

3. series diverges

4. converges with sum $= \frac{5}{3}$

5. converges with sum $= \frac{7}{6}$

6. converges with sum $= \frac{4}{3}$

005 10.0 points

If the n^{th} partial sum of $\sum_{n=1}^{\infty} a_n$ is

$$S_n = \frac{3n-5}{n+1},$$

What is the sum of $\sum_{n=1}^{\infty} a_n$?

1. sum $=$ 3

2. sum $=$ 4

3. sum $=$ 1

4. sum $=$ 0

5. sum $=$ 2

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006 10.0 points

If the n^{th} partial sum S_n of an infinite series

$$\sum_{n=1}^{\infty} a_n$$

is given by

$$S_n \;=\; 7 - \frac{n}{6^n}\,,$$

find a_n for $n > 1$.

1. $a_n \;=\; 7\left(\dfrac{7n-6}{6^n}\right)$

2. $a_n \;=\; 7\left(\dfrac{n-6}{6^{n-1}}\right)$

3. $a_n \;=\; \dfrac{7n-6}{6^n}$

4. $a_n \;=\; \dfrac{n-6}{6^{n-1}}$

5. $a_n \;=\; 7\left(\dfrac{5n-6}{6^n}\right)$

6. $a_n \;=\; \dfrac{5n-6}{6^n}$

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007 10.0 points

Find the general term for the sequence of partial sums for the series:

$$\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \cdots$$

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1. $\dfrac{n}{n-1}$

2. $\dfrac{2^n - 1}{2^n}$

3. $\dfrac{1}{2^n}$

4. 1

5. $\dfrac{n}{n+1}$

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008 10.0 points

Find the general term for the sequence of partial sums for

$$\sum_{n=1}^{\infty} \frac{1}{3^n}$$

1. $\dfrac{\dfrac{3^n - 1}{2}}{3^n}$

2. $\dfrac{1}{2}$

3. $\dfrac{3^n - 1}{3^n}$

4. 1

5. $\dfrac{1}{3^n}$

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009 10.0 points

Find the general term for the sequence of partial sums for the series:

$$\frac{1}{2} + \frac{1}{6} + \frac{1}{12} + \frac{1}{20} + \cdots$$

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1. $\dfrac{n}{n+1}$

2. $\dfrac{1}{n(n+1)}$

3. 1

4. $\dfrac{1}{n+1}$

5. $\dfrac{1}{2^n}$

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010 10.0 points

Determine whether the series is convergent or divergen by expressing s_n as a telescoping sum. If it is convergent find its sum.

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

1. convergent with a sum of 0

2. divergent

3. convergent with a sum of 2

4. convergent with a sum of 1

5. convergent with a sum of -1