

**Sequences and Series**

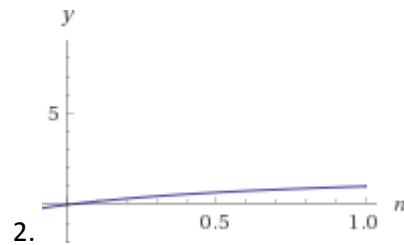
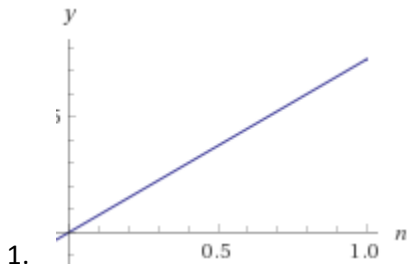
A) Write the first five terms of each sequence

1.  $\{-\frac{1}{2}, \frac{1}{4}, -\frac{1}{8}, \frac{1}{16}, -\frac{1}{32}\}$
2.  $\{1, 1, 2, 6, 24\}$
3.  $\{-\frac{1}{2}, \frac{2}{3}, -\frac{3}{4}, \frac{4}{5}, -\frac{5}{6}\}$

B) Find the indicated term of the sequence

1.  $a_{25} = -73$
2.  $a_{10} = \frac{1024}{10!}$
3.  $a_{11} = \frac{44}{239}$

C) Graph the first ten terms of the given sequences (Let  $n$  be the  $x$ - value and  $a_n$  be the  $y$ - values).



D) Write an expression for the *most apparent  $n$ th term of the sequence* (assume that  $n$  begins with 1).

1.  $1 + 3(n - 1)$
2.  $\frac{(-1)^n(n+1)}{(n+2)}$
3.  $\frac{1}{n^2}$

E) Simplify the ratio of radicals

1.  $\frac{1}{30}$
2. 90
3.  $n + 1$

F) Find the sum

1. 35
2.  $\frac{124}{429}$
3. 88
4. 30

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G) Use sigma notation to write out the sum

1.  $\sum_{n=1}^9 \frac{1}{3n}$
2.  $\sum_{n=1}^8 \left[ n \binom{n}{8} + 3 \right]$
3.  $\sum_{n=1}^6 (-1)^{n-1} 3^n$
4.  $\sum_{n=1}^{20} \frac{(-1)^{n-1}}{n^2}$
5.  $\sum_{n=1}^5 \frac{2^n - 1}{2^{n+1}}$

**Arithmetic Sequences**

A) Find a formula for  $a_n$  for the arithmetic sequence.

1.  $a_n = 5 + 6(n - 1)$
2.  $a_n = 100 - 8(n - 1)$
3.  $a_n = x + 2x(n - 1)$
4.  $a_n = 4 - \frac{5}{2}(n - 1)$
5.  $a_n = 100 - 3(n - 1)$

B) Find the indicated  $n$ th partial sum

1. 620
2. 220
3. 4000

C) Find the partial sum

1. 1275
2. 30,030
3. 355
4. 160,000

**Geometric Sequences**

A) Find the  $n$ th term of the geometric sequence

1. 2048
2.  $6 \left( -\frac{1}{3} \right)^{11}$
3.  $100e^{8x}$
4.  $500(1.02)^{39}$
5. 729
6. -2

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B) Find the sum of the finite geometric series

1. 511

2.  $\frac{387}{4}$

3.  $-6\left(1 - \frac{3^{21}}{2}\right)$

4.  $5000(1 - (1.06)^6)$

5.  $\frac{32}{5}\left(1 - \left(\frac{1}{4}\right)^{10}\right)$

C) Use summation notation to express the sum

1.  $\sum_{n=1}^7 5(3)^{n-1}$

2.  $\sum_{n=1}^{13} 2\left(-\frac{1}{2}\right)^{n-1}$

3.  $\sum_{n=1}^6 (0.1)(4)^{n-1}$