Student: Cole Lamers **Date:** 07/06/19	**Instructor:** Kelly Galarneau **Course:** CA&T Internet (70263) Galarneau	**Assignment:** 11.1 Sequences and Series

1. Complete the following statement.

   An infinite sequence is a function whose domain is the set of _____.

   An infinite sequence is a function whose domain is the set of positive integers .

2. Write the first five terms of the sequence whose general term, a_n, is given as

   $a_n = 5n - 4$.

   $a_1 = 1$

   $a_2 = 6$

   $a_3 = 11$

   $a_4 = 16$

   $a_5 = 21$

3. Write the first four terms of the sequence whose general term is given.

   $a_n = \dfrac{2n}{n+3}$

   $a_1 = .5 $ (Simplify your answer.)

   $a_2 = .8 $ (Simplify your answer.)

   $a_3 = 1 $ (Simplify your answer.)

   $a_4 = \dfrac{8}{7} $ (Simplify your answer.)

4. Write the first five terms of the sequence.

   $a_n = (-1)^{n+4}$

   $a_1 = -1$
   (Simplify your answer. Type an integer or a fraction.)

   $a_2 = 1$
   (Simplify your answer. Type an integer or a fraction.)

   $a_3 = -1$
   (Simplify your answer. Type an integer or a fraction.)

   $a_4 = 1$
   (Simplify your answer. Type an integer or a fraction.)

   $a_5 = -1$
   (Simplify your answer. Type an integer or a fraction.)

5. Write the first four terms of the sequence whose general term is given below.

   $a_n = \dfrac{n^4}{(n-1)!}$

   $a_1 = 1$
   (Type an integer or a simplified fraction.)

   $a_2 = 16$
   (Type an integer or a simplified fraction.)

   $a_3 = \dfrac{81}{2}$
   (Type an integer or a simplified fraction.)

   $a_4 = \dfrac{128}{3}$
   (Type an integer or a simplified fraction.)

6. Predict the general term, or nth term, a_n, for the sequence.

    3, 5, 7, 9, 11, ...

    $a_n =$ $2n + 1$

    (Simplify your answer.)

7.

Look at the pattern and then predict the general term, or nth term, a_n, of the sequence.	Which is the general term, or nth term, a_n, of the sequence?
$-10, 10, -10, 10, ...$	○ **A.** -10^n
	○ **B.** $(-10)^n$
	○ **C.** $-1^n \cdot 10$
	✔ **D.** $(-1)^n \cdot 10$

8. Predict the general term, or nth term, a_n, of the sequence.

    $1 \cdot 5, \; 2 \cdot 6, \; 3 \cdot 7, \; 4 \cdot 8, \; ...$

    $a_n =$ $n(n + 4)$

9. Find the sum of the series.

    $$\sum_{j=1}^{13} 8$$

    $$\sum_{j=1}^{13} 8 = \quad 104$$

10. Evaluate the series.

    $$\sum_{i=1}^{4} (4i + 1)$$

    $$\sum_{i=1}^{4} (4i + 1) = \quad 44$$

11. Find the sum of the sequence.

    $$\sum_{k=1}^{6} (-1)^k 3^k$$

    $$\sum_{k=1}^{6} (-1)^k 3^k = \quad 546$$

12. Use summation notation to write the series.

    $$\frac{1}{4(1)} + \frac{1}{4(2)} + \frac{1}{4(3)} + \; \cdots \; + \frac{1}{4(9)}$$

    Which summation represents the sum?

    ○ $\displaystyle\sum_{i=1}^{9} \frac{1}{i}$ ○ $\displaystyle\sum_{i=1}^{\infty} \frac{1}{4i}$

    ✔ $\displaystyle\sum_{i=1}^{9} \frac{1}{4i}$ ○ $\displaystyle\sum_{i=1}^{\infty} \frac{1}{i}$

13. The first term a_1 and a number d are given. Write the next four terms of the sequence defined by $a_2 = a_1 + d$, $a_3 = a_2 + d$, $a_4 = a_3 + d$, and $a_5 = a_4 + d$.

   $a_1 = 5$, d = 2

   The next four terms of the sequence are $a_2 = \underline{\quad 7 \quad}$, $a_3 = \underline{\quad 9 \quad}$, $a_4 = \underline{\quad 11 \quad}$, and
   $a_5 = \underline{\quad 13 \quad}$.
   (Simplify your answer. Type an integer or a fraction.)

14. Let $a_n = 5n - 9$. Find a_{n+1} and a_{n-1}.

   For given $a_n = 5n - 9$, $a_{n+1} = \underline{\quad 5n - 4 \quad}$, and $a_{n-1} = \underline{\quad 5n - 14 \quad}$.
   (Simplify your answer.)

15. Watch the video and then solve the problem given below.

   Click here to watch the video.[1]

   Write the fourth term of the recursively defined sequence $a_1 = -5$, $a_{n+1} = 6 - 3a_n$.

   $a_4 = \underline{\quad 177 \quad}$

   1: http://mediaplayer.pearsoncmg.com/assets/0AhBIjlmlWuWvp09w91zzSP6_uL_FPsN?clip=3

16. Watch the video and then solve the problem given below.

   Click here to watch the video.[2]

   Write the sixth term of the sequence whose general term is $a_n = \dfrac{(-1)^{n-1}(11)^n}{(n+1)!}$.

   Choose the correct answer below.

   ✔ **A.** $a_6 = -\dfrac{11^6}{7!}$

   ○ **B.** $a_6 = \dfrac{11^5}{6!}$

   ○ **C.** $a_6 = \dfrac{11^6}{7!}$

   ○ **D.** $a_6 = -\dfrac{11^5}{6!}$

   2: http://mediaplayer.pearsoncmg.com/assets/0AhBIjlmlWuWvp09w91zzSP6_uL_FPsN?clip=6

17. Watch the video and then solve the problem given below.

   Click here to watch the video.[3]

   Write the sum $8 + 11 + 14 + \cdots + 59 + 62 + 65$ in summation notation.

   In summation notation, the sum is $\displaystyle\sum_{k=1}^{20} \left(\underline{\quad 3k + 5 \quad} \right)$. (Type an expression using k as the variable.)

   3: http://mediaplayer.pearsoncmg.com/assets/0AhBIjlmlWuWvp09w91zzSP6_uL_FPsN?clip=8