GreatHearts

Pre-Calculus: Week of April 27 – May 1

Time Allotment: 40 minutes per day

Student Name: ______________________________

Teacher Name: Mrs. Melisa R. Walters

Packet Overview

Date	Objective(s)	Page Number
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Zoom Guided instruction:

Period 3 Monday and Wednesday from 1:00PM – 1:50 PM

Period 4 Tuesday and Thursday from 10:00AM – 10:50 AM

Period 6 Tuesday and Thursday from 1:00PM – 1:50 PM

Thank you for your hard work students. I appreciate all of you. Have a great day!

Academic Honesty

I certify that I completed this assignment independently in accordance with the GHNO Academy Honor Code.

Student signature:

____

I certify that my student completed this assignment independently in accordance with the GHNO Academy Honor Code.

Parent signature:

____

Pre-Calculus: Chapter 11 Sequences, Probability and Counting Theory
April 27 – May 1

Monday, April 27

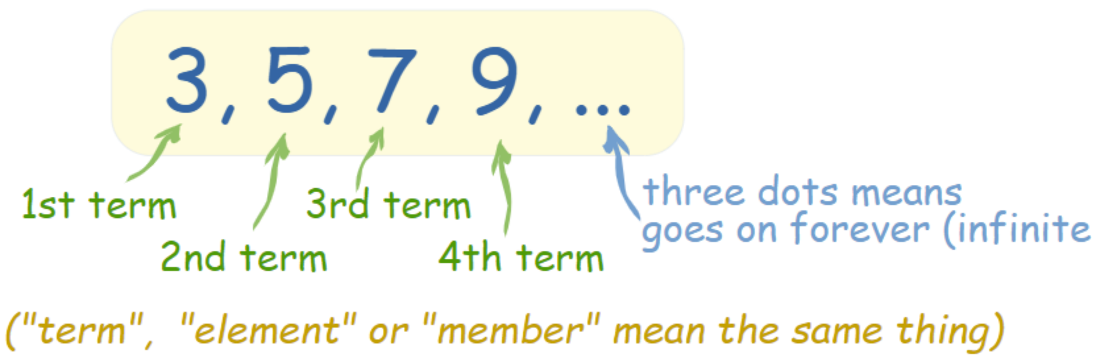
Pre-Calculus: Chapter 11
Lesson 1: Sequences and Their Notations

Objective: Determining a sequence from a pattern.

Lesson 1: What is a Sequence?

A sequence is a function whose domain is a subset of the counting numbers. In other words, a sequence is a list of things (usually numbers) that are in order.

Example of a Sequence:



Infinite or Finite

The ellipsis (…) indicates that the sequence continues indefinitely. Each number in the sequence is called a **term.** The first four terms of this sequence is 3, 5, 7, and 9. When the sequence goes on forever it is called an **infinite sequence**; otherwise, it is a **finite sequence**.

Examples:

{1, 2, 3, 4, ...} is a very simple sequence (and it is an **infinite sequence**)

{20, 25, 30, 35, ...} is also an infinite sequence

{1, 3, 5, 7} is the sequence of the first 4 odd numbers (and is a **finite sequence**)

{4, 3, 2, 1} is 4 to 1 **backwards**

{1, 2, 4, 8, 16, 32, ...} is an infinite sequence where every term doubles

{a, b, c, d, e} is the sequence of the first 5 letters **alphabetically**

{f, r, e, d} is the sequence of letters in the name "fred"

{0, 1, 0, 1, 0, 1, ...} is the sequence of **alternating** 0s and 1s (yes they are in order, it is an alternating order in this case)

In Order
When we say the terms are "in order", we are free to define **what order that is**! They could go forwards, backwards ... or they could alternate ... or any type of order we want!

Like a Set?
A sequence is like a Set, except:

- The terms are **in order** and with Sets the order does not matter
- The same value can appear many time in a sequence and only once in sets.

Example: {0, 1, 0, 1, 0, 1, ...} is the **sequence** of alternating 0s and 1s.

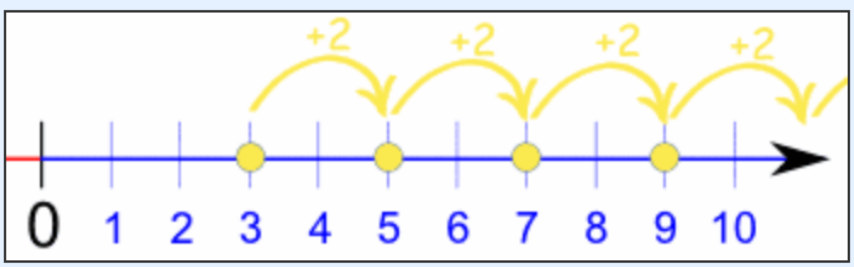
The **set** is just {0,1}

Notation
Sequences also use the same **notation** as sets: list each element, separated by a comma, and then put curly brackets around the whole thing. {3, 5, 7, …}

The curly brackets { } are sometimes called "set brackets" or "braces".

A Rule
A Sequence usually has a Rule, which is a way to find the value of each term.

Example: the sequence {3, 5, 7, 9, ...} starts at 3 and jumps 2 every time:



As a Formula
Saying "*starts at 3 and jumps 2 every time*" is fine, but it doesn't help us calculate the:

- 10th term,
- 100th term, or
- n^{th} term, where n could be any term number we want.

So, we want a formula with "n" in it (where n is any term number).

So, What Can A Rule For {3, 5, 7, 9, ...} Be?

Firstly, we can see the sequence goes up 2 every time, so we can **guess** that a Rule is something like "2 times n" (where "n" is the term number). Let's test it out:

Test Rule: 2n

n	Term	Test Rule
1	3	2**n** = 2***1 = 2**
2	5	2**n** = 2***2 = 4**
3	7	2**n** = 2***3 = 6**

That **nearly** worked ... but it is **too low** by 1 every time, so let us try changing it to:

Test Rule: 2n+1

n	**Term**	**Test Rule**
1	**3**	2**n**+1 = 2***1** + 1 =3
2	**5**	2**n**+1 = 2***2** + 1 =5
3	**7**	2**n**+1 = 2***3** + 1 =7

That Works!

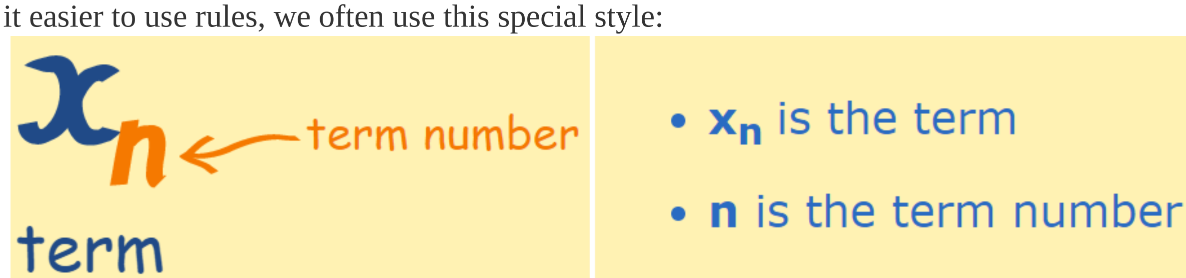
So instead of saying "starts at 3 and jumps 2 every time" we write this: **2n+1**
Now, we calculate the 10th term: 2*10 + 1 = 21
Your Turn: calculate the 100th term:_____________
Answer: 2*100 +1 =201

Many Rules
But mathematics is so powerful we can find **more than one Rule** that works for any sequence.

Our example sequence {3, 5, 7, 9, …} has a rule of 2n+1. But, how about "odd numbers without a 1 in them": we get: {3, 5, 7 9, 23, 25 …} A completely different sequence!

And, we could find more rules that match our sequence. We really could.
So it is best to say "A Rule" rather than "The Rule" (unless we know it is the right Rule).

Notation
To make it easier to use rules, we often use this special style:



For example, "5th term" is written as: X_5

So, a rule for **{3, 5, 7, 9, …}** can be written as an equation like this:

$$X_n = 2n+1$$

Another Example: The sequence established by the number of hits on the website is {2, 4, 8, 16, 32, …}. Note: One type of formula is an explicit formula, which defines the terms of a sequence using their position in the sequence. Explicit formulas are helpful if we want to find a specific term of a sequence without finding all of the previous terms.

We can use the formula to find the nth term of the sequence, where n is any positive number. In our example, each number in the sequence is double the previous number, so we can use powers of 2 to write a formula for the nth term.

$$\begin{array}{c} \{2,\ 4,\ 8,\ 16,\ 22,\ \ldots,\ ?,\ \ldots\} \\ \downarrow\ \ \downarrow\ \ \downarrow\ \ \downarrow\ \ \downarrow\ \qquad \downarrow \\ \{2^1,\ 2^2,\ 2^3,\ 2^4,\ 2^5,\ \ldots,\ 2^n,\ \ldots\} \end{array}$$

The first term of the sequence is $2^1 = 2$, the second term is $2^2 = 4$, the third term is $2^3 = 8$, and so on. The nth term of the sequence can be found by raising 2 to the nth power. An explicit formula for a sequence is named by a lower case letter a, b, c... with the subscript n. The explicit formula for this sequence is:

$$a_n = 2^n$$

Let's find the number of hits for a website on the 31st day of the month.

$$\begin{aligned} a_{31} &= 2^{31} \\ &= 2{,}147{,}483{,}648 \end{aligned}$$

Question: Does a sequence always have to begin with a_1?
Answer: No. In certain problems, it may be useful to define the initial term as a0 instead of a1 . In these problems, the domain of the function includes 0.

Question: What are the 4 types of sequences?
Answer: The 4 types of sequences are:

- Arithmetic Sequences.
- Geometric Sequences.
- Harmonic Sequences.
- Fibonacci Numbers.

Any questions right now? Please email me at melisa.walters@greatheartsnorthernoaks.org
<u>Exercises for Monday, April 27, 2020</u> Please fill in the blanks:

Identify the next **term** in each **sequence** of numbers below. Then, describe the pattern.

1) 1, 2, 4, 8, _____ ________ description ________	2) 2, 6, 18, 54, _____ ____________________
3) 16, 8, 4, 2, _____ ____________________	4) -1, -4, -16, -64, _____ ____________________

Tuesday, April 28

Pre-Calculus: Chapter 11
Lesson 2: Predict the terms of a sequence defined by an explicit formula.

Objective: Predict the terms of a sequence defined by an explicit formula.

Lesson 2: Recap of sequence.

sequence

A **sequence** is a function whose domain is the set of positive integers. A **finite sequence** is a sequence whose domain consists of only the first n positive integers. The numbers in a sequence are called **terms**. The variable a with a number subscript is used to represent the terms in a sequence and to indicate the position of the term in the sequence.

$$a_1, a_2, a_3, \ldots, a_n, \ldots$$

We call a_1 the first term of the sequence, a_2 the second term of the sequence, a_3 the third term of the sequence, and so on. The term an is called the ***nth* term of the sequence**, or the general term of the sequence. An **explicit formula** defines the nth term of a sequence using the position of the term. A sequence that continues indefinitely is an **infinite sequence**.

STEPS to writing sequences:

Given an explicit formula, write the first n terms of a sequence.

1. Substitute each value of n into the formula. Begin with $n = 1$ to find the first term, a_1 .
2. To find the second term, a_2, use $n = 2$.
3. Continue in the same manner until you have identified all n terms.

Example: Writing the Terms of a sequence defined by an explicit formula

Write the first five terms of the sequence defined by the explicit formula $a_n = -3n + 8$.

Solution: Substitute $n = 1$ into the formula. Repeat with values 2 through 5 for n.

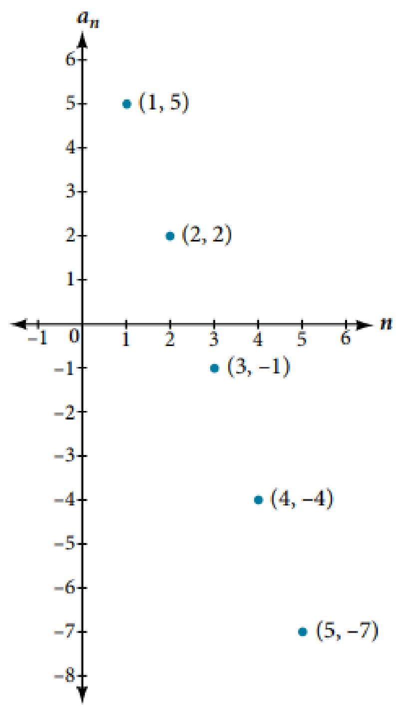
$$\begin{aligned} n &= 1 \quad a_1 = -3(1) + 8 = 5 \\ n &= 2 \quad a_2 = -3(2) + 8 = 2 \\ n &= 3 \quad a_3 = -3(3) + 8 = -1 \\ n &= 4 \quad a_4 = -3(4) + 8 = -4 \\ n &= 5 \quad a_5 = -3(5) + 8 = -7 \end{aligned}$$

The first five terms are $\{5, 2, -1, -4, -7\}$.

Analysis: The sequence values can be listed in a table format. A table, such as below, is a convenient way to input the function into a graphing utility.

n	1	2	3	4	5
a_n	5	2	−1	−4	−7

A graph can be made from this table of values. From the graph below, we can see that this sequence represents a linear function, but notice the graph is not continuous because the domain is over the positive integers only.



YOUR turn to try it!
Write the first five terms of the sequence defined by the explicit formula $t_n = 5n - 4$.

****Please check answer key before proceeding.*

Investigating Alternating Sequences

Sometimes sequences have terms that are alternate. In fact, the terms may actually alternate in sign.
The steps to finding terms of the sequence are the same as if the signs did not alternate. However, the resulting terms will not show increase or decrease as *n* increases. Let's take a look at the following sequence.

$$\{2, -4, 6, -8\}$$

Notice the first term is greater than the second term, the second term is less than the third term, and the third term is greater than the fourth term. This trend continues forever. Do not rearrange the terms in numerical order to interpret the sequence.

STEPS Given an explicit formula with alternating terms, write the first *n* terms of a sequence.

1. Substitute each value of *n* into the formula. Begin with $n = 1$ to find the first term, a_1. The sign of the term is given by the $(-1)^n$ in the explicit formula.
2. To find the second term, a_2, use $n = 2$.
3. Continue in the same manner until you have identified all n terms.

Example: Writing the Terms of an Alternating Sequence Defined by an Explicit Formula
Write the first five terms of the sequence.

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

Solution: Substitute $n = 1$, $n = 2$, and so on in the formula.

$$n = 1 \quad a_1 = \frac{(-1)^1 1^2}{1+1} = -\frac{1}{2}$$

$$n = 2 \quad a_2 = \frac{(-1)^2 2^2}{2+1} = \frac{4}{3}$$

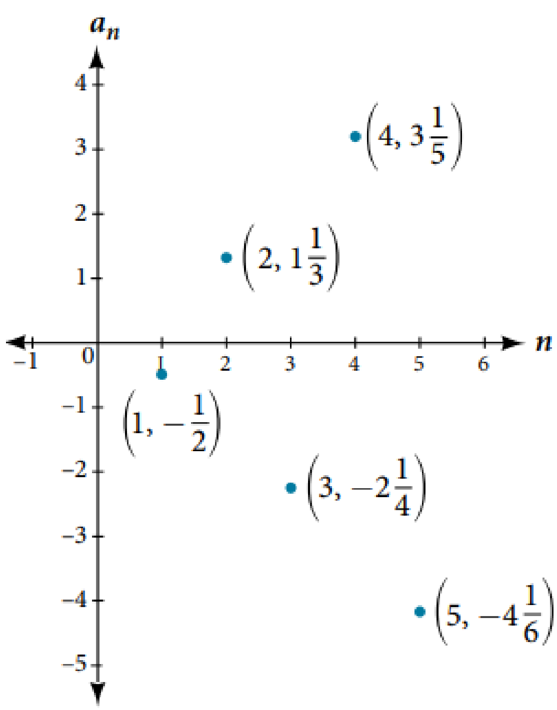
$$n = 3 \quad a_3 = \frac{(-1)^3 3^2}{3+1} = -\frac{9}{4}$$

$$n = 4 \quad a_4 = \frac{(-1)^4 4^2}{4+1} = \frac{16}{5}$$

$$n = 5 \quad a_5 = \frac{(-1)^5 5^2}{5+1} = -\frac{25}{6}$$

The first five terms are $\left\{-\frac{1}{2}, \frac{4}{3}, -\frac{9}{4}, \frac{16}{5}, -\frac{25}{6}\right\}$

Analysis The graph of this function looks different from the ones we have seen previously in this section because the terms of the sequence alternate between positive and negative values.



Question: In our Example, does the (−1) to the power of *n* account for the oscillations of signs?
Answer: Yes, the power might be n, n + 1, n − 1, and so on, but any odd powers will result in a negative term, and any even power will result in a positive term.

Any questions right now? Please email me at melisa.walters@greatheartsnorthernoaks.org

Exercises for Tuesday, April 28, 2020

Write the first five terms of the sequence:

$$a_n = \frac{4n}{(-2)^n}$$

Wednesday, April 29

Pre-Calculus: Chapter 11

Lesson 3: Investigating Piecewise Explicit Formulas

Objective: Investigating Piecewise Explicit Formulas

Lesson 3:
We've learned that sequences are functions whose domain is over the positive integers. This is true for other types of functions, including some piecewise functions. Recall that a piecewise function is a function defined by multiple subsections. A different formula might represent each individual subsection.

STEPS on how to:
Given an explicit formula for a piecewise function, write the first *n* terms of a sequence

1. Identify the formula to which $n = 1$ applies.
2. To find the first term, a_1, use $n = 1$ in the appropriate formula.
3. Identify the formula to which $n = 2$ applies.
4. To find the second term, a_2, use $n = 2$ in the appropriate formula.
5. Continue in the same manner until you have identified all n terms.

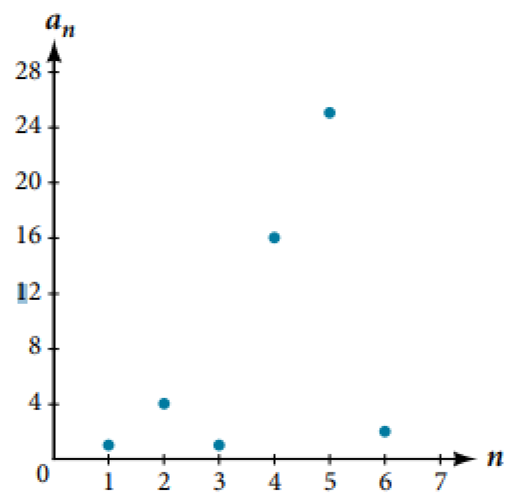
Example: Writing the Terms of a Sequence Defined by a Piecewise Explicit Formula
Write the first six terms of the sequence.

$$a_n = \begin{cases} n^2 \text{ if } n \text{ is not divisible by } 3 \\ \frac{n}{3} \text{ if } n \text{ is divisible by } 3 \end{cases}$$

Solution: Substitute $n = 1$, $n = 2$, and so on in the appropriate formula. Use n^2 when n is not a multiple of 3. Use $\frac{n}{3}$ when n is a multiple of 3.

$$a_1 = 1^2 = 1 \qquad 1 \text{ is not a multiple of 3. Use } n^2.$$
$$a_2 = 2^2 = 4 \qquad 2 \text{ is not a multiple of 3. Use } n^2.$$
$$a_3 = \frac{3}{3} = 1 \qquad 3 \text{ is a multiple of 3. Use } \frac{n}{3}.$$
$$a_4 = 4^2 = 16 \qquad 4 \text{ is not a multiple of 3. Use } n^2.$$
$$a_5 = 5^2 = 25 \qquad 5 \text{ is not a multiple of 3. Use } n^2.$$
$$a_6 = \frac{6}{3} = 2 \qquad 6 \text{ is a multiple of 3. Use } \frac{n}{3}.$$

The first six terms are {1, 4, 1, 16, 25, 2}.
Analysis Every third point on the graph shown below stands out from the two nearby points. This occurs because the sequence was defined by a piecewise function.



YOUR Turn to Try it!
Write the first six terms of the sequence.

$$a_n = \begin{cases} 2n^3 \text{ if } n \text{ is odd} \\ \dfrac{5n}{2} \text{ if } n \text{ is even} \end{cases}$$

*****Please check the answer key before proceeding.*

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Finding an Explicit Formula

Thus far, we have been given the explicit formula and asked to find a number of terms of the sequence. Sometimes, the explicit formula for the *nth* term of a sequence is not given. Instead, we are given several terms from the sequence. When this happens, we can work in reverse to find an explicit formula from the first few terms of a sequence. The key to finding an explicit formula is to look for a pattern in the terms. Keep in mind that the pattern may involve alternating terms, formulas for numerators, formulas for denominators, exponents, or bases.

STEPS on how to:

Given the first few terms of a sequence, find an explicit formula for the sequence.

1. Look for a pattern among the terms.
2. If the terms are fractions, look for a separate pattern among the numerators and denominators.
3. Look for a pattern among the signs of the terms.
4. Write a formula for a_n in terms of n. Test your formula for $n = 1$, $n = 2$, and $n = 3$.

Example: Writing an Explicit Formula for the nth Term of a Sequence

Write an explicit formula for the nth term of each sequence.

a. $\left\{-\frac{2}{11}, \frac{3}{13}, -\frac{4}{15}, \frac{5}{17}, -\frac{6}{19}, \ldots\right\}$

b. $\left\{-\frac{2}{25}, -\frac{2}{125}, -\frac{2}{625}, -\frac{2}{3{,}125}, -\frac{2}{15{,}625}, \ldots\right\}$

c. $\{e^4, e^5, e^6, e^7, e^8, \ldots\}$

Solution: Look for the pattern in each sequence.

a. The terms alternate between positive and negative. We can use $(-1)^n$ to make the terms alternate. The numerator can be represented by $n + 1$. The denominator can be represented by $2n + 9$.

$$a_n = \frac{(-1)^n(n+1)}{2n+9}$$

b. The terms are all negative.

$\left\{-\frac{2}{25}, -\frac{2}{125}, -\frac{2}{625}, -\frac{2}{3{,}125}, -\frac{2}{15{,}625}, \ldots\right\}$ The numerator is 2

$\left\{-\frac{2}{5^2}, -\frac{2}{5^3}, -\frac{2}{5^4}, -\frac{2}{5^5}, -\frac{2}{5^6}, -\frac{2}{5^7}, \ldots -\frac{2}{5^n}\right\}$ The denominators are increasing powers of 5

So we know that the fraction is negative, the numerator is 2, and the denominator can be represented by 5^{n+1}.

$$a_n = -\frac{2}{5^{n+1}}$$

c. The terms are powers of e. For $n = 1$, the first term is e^4 so the exponent must be $n + 3$.

$$a_n = e^{n+3}$$

Any questions right now? Please email me at melisa.walters@greatheartsnorthernoaks.org

Exercise for Wednesday April 29, 2020
Section Exercises page 948 #17, 19

Thursday, April 30

Pre-Calculus: Chapter 11
Lesson 4: Writing the Terms of a Sequence Defined by a Recursive Formula

Objective: Evaluate sequence defined by a recursive formula

Lesson:
Sequences occur naturally in the growth patterns of nautilus shells, pinecones, tree branches, and many other natural structures. We may see the sequence in the leaf or branch arrangement, the number of petals of a flower, or the pattern of the chambers in a nautilus shell. Their growth follows the Fibonacci sequence, a famous sequence in which each term can be found by adding the preceding two terms. The numbers in the sequence are 1, 1, 2, 3, 5, 8, 13, 21, 34,…. Other examples from the natural world that exhibit the Fibonacci sequence are the Calla Lily, which has just one petal, the Black-Eyed Susan with 13 petals, and different varieties of daisies that may have 21 or 34 petals. Each term of the Fibonacci sequence depends on the terms that come before it. The Fibonacci sequence cannot easily be written using an explicit formula. Instead, we describe the sequence using a **recursive formula**, a formula that defines the terms of a sequence using previous terms.

A recursive formula always has two parts: the value of an initial term (or terms), and an equation defining an in terms of preceding terms. For example, suppose we know the following:

$$a_1 = 3$$
$$a_n = 2a_{n-1} - 1, \text{ for } n \geq 2$$

We can find the subsequent terms of the sequence using the first term.

$$a_1 = 3$$
$$a_2 = 2a_1 - 1 = 2(3) - 1 = 5$$
$$a_3 = 2a_2 - 1 = 2(5) - 1 = 9$$
$$a_4 = 2a_3 - 1 = 2(9) - 1 = 17$$

So the first four terms of the sequence are {3, 5, 9, 17}

The recursive formula for the Fibonacci sequence states the first two terms and defines each successive term as the sum of the preceding two terms.

$$a_1 = 1$$
$$a_2 = 1$$
$$a_n = a_{n-1} + a_{n-2} \text{ for } n \geq 3$$

To find the tenth term of the sequence, for example, we would need to add the eighth and ninth terms. We were told previously that the eighth and ninth terms are 21 and 34, so

$$a_{10} = a_9 + a_8 = 34 + 21 = 55$$

recursive formula
A **recursive formula** is a formula that defines each term of a sequence using preceding term(s). Recursive formulas must always state the initial term, or terms, of the sequence.

Question: Must the first two terms always be given in a recursive formula?
Answer: No. The Fibonacci sequence defines each term using the two preceding terms, but many recursive formulas define each term using only one preceding term. These sequences need only the first term to be defined.

STEPS on how to:
Given a recursive formula with only the first term provided, write the first *n* terms of a sequence.

1. Identify the initial term, a_1, which is given as part of the formula. This is the first term.
2. To find the second term, a_2, substitute the initial term into the formula for a_{n-1} . Solve.
3. To find the third term, a_3, substitute the second term into the formula. Solve.
4. Repeat until you have solved for the nth term.

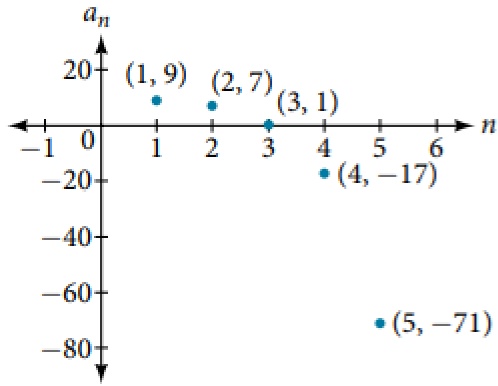
Example: Writing the Terms of a Sequence Defined by a Recursive Formula
Write the first five terms of the sequence defined by the recursive formula.

$$a_1 = 9$$
$$a_n = 3a_{n-1} - 20, \text{ for } n \geq 2$$

Solution: The first term is given in the formula. For each subsequent term, we replace an − 1 with the value of the preceding term.

$$\begin{array}{ll} n = 1 & a_1 = 9 \\ n = 2 & a_2 = 3a_1 - 20 = 3(9) - 20 = 27 - 20 = 7 \\ n = 3 & a_3 = 3a_2 - 20 = 3(7) - 20 = 21 - 20 = 1 \\ n = 4 & a_4 = 3a_3 - 20 = 3(1) - 20 = 3 - 20 = -17 \\ n = 5 & a_5 = 3a_4 - 20 = 3(-17) - 20 = -51 - 20 = -71 \end{array}$$

The first five terms are {9, 7, 1, – 17, – 71}.



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Exercises for Thursday April 30, 2020

1. Write the first five terms of the sequence defined by the recursive formula.

$$a_1 = 2$$
$$a_n = 2a_{n-1} + 1, \text{ for } n \geq 2$$

2. For each sequence, find the indicated term.
   a. Find the 5th term for the sequence: $t_1 = 3$, $t_n = 2t_{n-1}$
   b. Find the 4th term for the sequence: $b_1 = 2$, $b_n = (b_{n-1})^2 + 1$

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Friday, May 1

Pre-Calculus: Chapter 11
Lesson 5: Sequences and Their Notations

Objective: Confirm the solutions using calculator skills

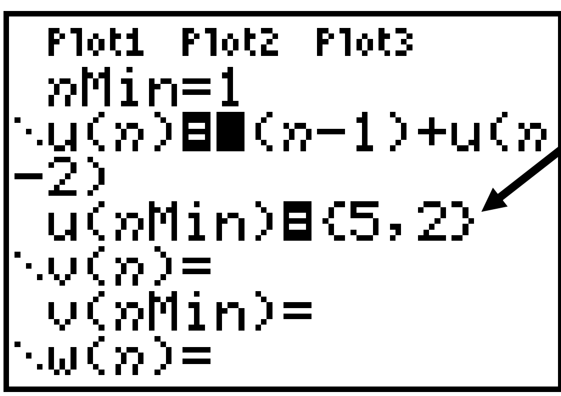
*<u>***NOTE: First, please complete the quiz located at the end of the packet. Then, you may begin this lesson.</u>*

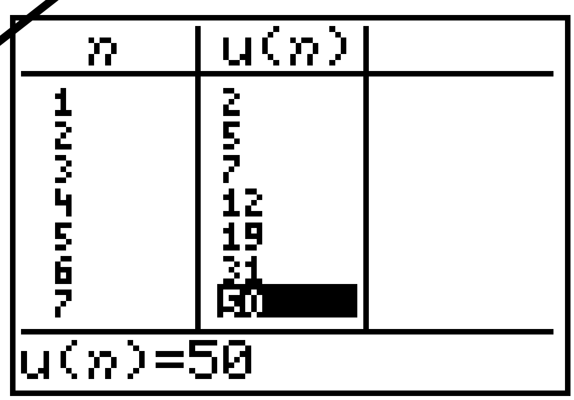
Lesson: Recursion on the Graphing Calculator

Consider $t_1 = 2,\ t_2 = 5$

$t_n = t_{n-1} + t_{n-2},\ n > 2$

On the Ti83 set the mode to seq.
If you have to define the first two (or more) terms, use a list to define the terms as shown (note reverse order) in the example below for the sequence.
Note: To define a sequence, you must specify: nMin = usually 1; u(n) – the function for the sequence; u(nMin) – the first number in the sequence.
<u>Steps to enter into calculator:</u>
Enter the data in: Y=
This screen appears: Min=1,
second line enter: u(n-1)+u(n-2)
u(nMin)={5,2}
then hit trace for the sequence





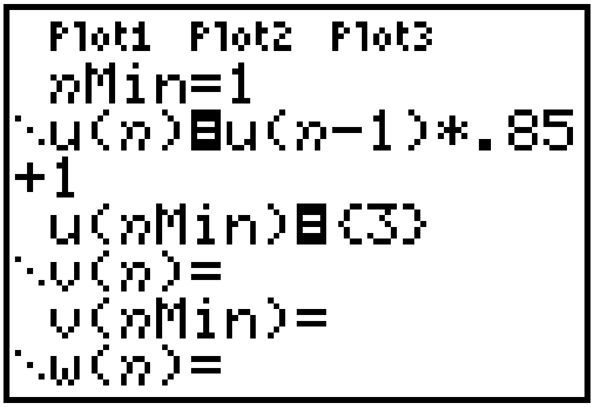
Sequence is {2, 5, 7, 12, 19, 31, 50, … }

Example: **Burning Eyes or Slimy Bottoms**

Scenario 1

Suppose you have just shocked the pool.
The chlorine level is 3 ppm. You decide to add 1 ppm per day. What happens to the chlorine level?

The Model



The Data

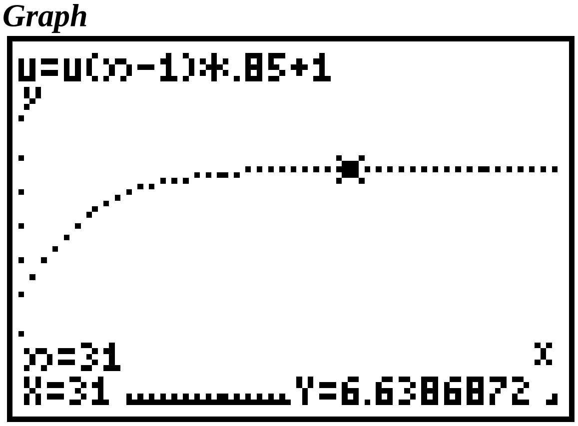
n	u(n)
1	3
2	3.55
3	4.0175
4	4.4149
5	4.7526
6	5.0397
7	5.2838

n=1

n	u(n)
1	3
7	5.2838
13	6.1451
19	6.47
25	6.5925
31	6.6387
37	6.6561

n=1

The Graph



Notice the chlorine level stabilizes at about 6.64 – 6.65 ppm … Burning eyes!

Scenario 2

Suppose you have just shocked the Pool.
The chlorine level is 3 ppm. You decide to add 0.1 ppm per day.
What happens to the chlorine level?

The Model

Plot1 Plot2 Plot3
nMin=1
$u(n)$=$u(n-1)$*.85+0.1
$u(n\text{Min})$={3}
$v(n)$=
$v(n\text{Min})$=
$w(n)$=

The Data

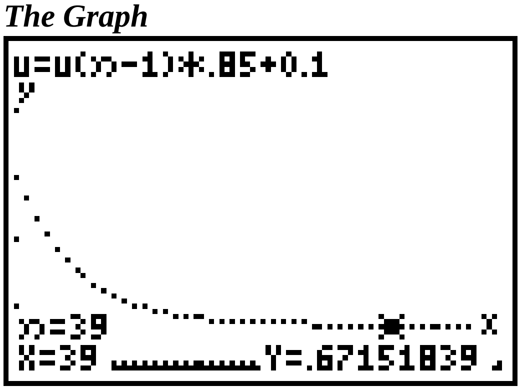
n	$u(n)$
1	3
2	2.65
3	2.3525
4	2.0996
5	1.8847
6	1.702
7	1.5467

n=1

n	$u(n)$
1	3
7	1.5467
13	.99856
19	.79184
25	.71388
31	.68447
37	.67338

n=1

The Graph



Notice the chlorine level stabilizes at about 0.67 ppm … Slime time!

ANSWER KEY

Exercises for Monday, April 27, 2020

Identify the next **term** in each **sequence** of numbers below. Then, describe the pattern.

1) 1, 2, 4, 8, 16	multiply by 2 each time (description)	2) 2, 6, 18, 54, 162	multiply by 3 each time
3) 16, 8, 4, 2, 1	divide by 2 or multiply by ½	4) -1, -4, -16, -64, -256	multiply by 4

Exercises for Tuesday April 28, 2020

Try it! The first five terms are {1, 6, 11, 16, 21}.

Exercise:

The first five terms are $\left\{-2, 2, -\frac{3}{2}, 1, -\frac{5}{8}\right\}$.

Exercises for Wednesday April 29, 2020

Try it! The first six terms are {2, 5, 54, 10, 250, 15}.

Section exercises:

17. $\frac{1}{3}, \frac{4}{5}, \frac{9}{7}, \frac{16}{9}, \frac{25}{11}, 31, 44, 59$

19. $-0.6, -3, -15, -20, -375, -80, -9375, -320$

Exercises for Thursday, April 30, 2020

1. Solution:_ {2, 5, 11, 23, 47}
2. Solution:
   a. $t_5 = 48$

		$t_2 = 2t_1 = 2 \times 3 = 6$
$t_1 = 3$	→	$t_3 = 2t_2 = 2 \times 6 = 12$
$t_n = 2 \times t_{n-1}$		$t_4 = 2t_3 = 2 \times 12 = 24$

		$t_2 = 2t_1 = 2 \times 3 = 6$
		$t_5 = 2t_4 = 2 \times 24 = 48$

b. $b_4 = 677$

		$b_2 = (b_1)^2 + 1 = 2^2 + 1 = 4 + 1 = 5$
$b_1 = 2$	→	$b_3 = (b_2)^2 + 1 = 5^2 + 1 = 25 + 1 = 26$
$b_n = (b_{n-1})^2 + 1$		$b_4 = (b_3)^2 + 1 = 26^2 + 1 = 676 + 1 = 677$

Exercises for Friday, May 1, 2020

Please turn in quiz.

Name:
Date:

Pre – Calculus Quiz

1. What is the definition of a sequence?

2. Choose the correct answer for the following sequence: 5, 8, 11, 14, 17…

   - $a_n = 3n + 2$
   - $a_n = 8 - 5n$
   - $a_n = 5(3)^{n-1}$
   - $a_n = 5 + 3n$

3. What is the 100th term in the sequence $a_n = 4n - 12$?