

Warm up

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11/(8th term of the Fibonacci Sequence)

1. Describe, using words, what each of these expressions mean.

1. a_{14} **The 14th term**
2. a_n **The "nth" term (current term)**
3. a_{n-1} **Previous term**
4. $f(n + 1)$ **Next term**
5. n **Position number of the current term**
6. $f(1)$ **1st term**
7. What is the difference between "n - 1" and "f(n - 1)"? Explain.
 $n - 1$ is a position number. $f(n - 1)$ is the actual value of a term.

Get a
Calculator

Quiz News

There will be a quiz on the Tuesday after Thanksgiving on Sequences

Semester Exam is Wednesday, December 14th.

Anything we have learned is fair game- you will get a list of topics after Thanksgiving and a review packet a week before the exam. We will have a couple of days to review in class.

Check Homework

Write a Recursive Rule for The Fibonacci Sequence

1, 1, 2, 3, 5, 8, ...

$$\begin{aligned} f(1) &= 1 \\ f(2) &= 1 \\ f(n) &= f(n-1) + f(n-2) \text{ for } n > 2 \end{aligned}$$

Explicit Formula for the Fibonacci Sequence

$$\frac{\left(\frac{1 + \sqrt{5}}{2}\right)^n - \left(\frac{1 - \sqrt{5}}{2}\right)^n}{\sqrt{5}}$$

Find the indicated term of the sequence.

7th term: -2, 22, -242, ...

-3,543,122

Find the indicated term of the sequence.

25th term: 3, -10, -23, -36, ...

-309

Write the explicit and recursive formula for this sequence.

6, 2, -2, -6, -10, ...

Explicit: $f(n) = 6 - 4(n - 1)$

Recursive: $f(1) = 6$

$f(n) = f(n - 1) - 4$

Write the explicit and recursive formula for this sequence.

9, 3, 1, 1/3...

Explicit: $f(n) = 9 \cdot \left(\frac{1}{3}\right)^{n-1}$

Recursive: $f(1) = 9$

$f(n) = f(n - 1) \cdot \frac{1}{3}$

Write the explicit and recursive formula for this sequence.

16, 35, 54, 73, ...

Explicit: $f(n) = 16 + 19(n - 1)$

Recursive: $f(1) = 16$

$f(n) = f(n - 1) + 19$

Write the explicit and recursive formula for this sequence.

2, 14, 98, 686 ...

Explicit: $f(n) = 2 \cdot 7^{(n-1)}$

Recursive: $f(1) = 2$

$f(n) = f(n - 1) \cdot 7$

Critical Thinking:
What is the difference between recursive formulas and explicit formulas?

Challenge:

If the 25th term of an **arithmetic sequence** is 50 and the 27th term is 100, write an explicit and recursive formula for the sequence.

Explicit: $f(n) = -550 + 25(n - 1)$

Recursive: $f(1) = -550; f(n) = f(n - 1) + 25$

Challenge:

If the 31st term of an **arithmetic sequence** is 150, and each consecutive term has a common difference of 3, find the explicit formula for the sequence.

$$f(n) = 60 + 3(n - 1)$$

What is the 42nd term?

$$f(42) = 183$$

Challenge:

If the 6th term of a **geometric sequence** is **24** and the 5th term of a geometric sequence is **12**...

What is the 9th term? **192**

What is the 1st term? **0.75**

What is the explicit rule?

Explicit: $a_n = .75(2)^{n-1}$

Challenge:

If the 2nd term of a **geometric sequence** is **12** and the 4th term of a geometric sequence is **108**, write an explicit and recursive formula for the sequence.

Explicit: $f(n) = 4(3)^{n-1}$

Recursive: $f(1) = 4; f(n) = 3 \cdot f(n - 1)$

Homework

Worksheet