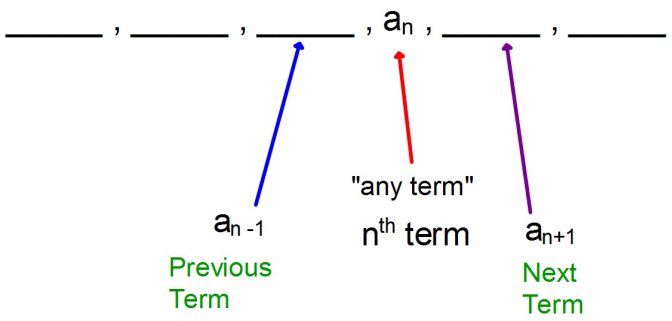
You can use a variable, such as a, with positive integer subscripts to represent the terms in a sequence.

1st term a_1 2nd term a_2 3rd term a_3 . . .

What notation identifies ANY term in a sequence?



Formulas used to generate Sequences:

Recursive Formula

A formula that gives any term by relating it to the previous term or terms.

Explicit Formula

A formula that allows you to find any term by using it's term #.

For example if I want to find the 20th term I can plug 20 into a formula and get just that term.

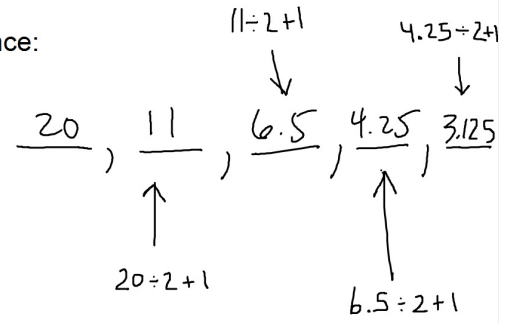
Recursive Formula Examples:

Find the first 5 terms in this sequence:

$a_1 = 20$

$a_n = (a_{n-1}) \div 2 + 1$

previous term divided by 2 then add +1



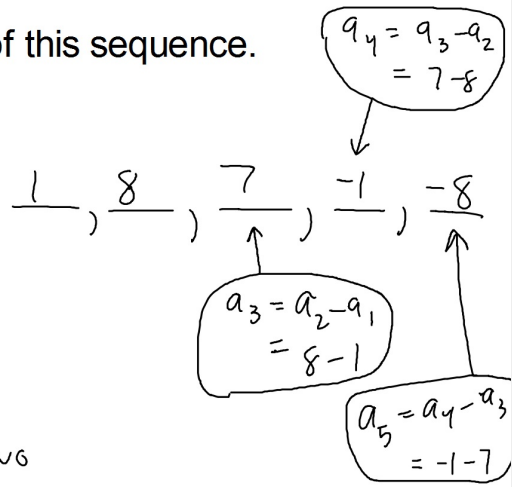
Write the first 5 terms of this sequence.

$a_1 = 1$

$a_2 = 8$

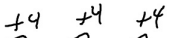
$a_n = (a_{n-1}) - (a_{n-2})$

any term is the difference of the previous two



Write a recursive formula for this sequence.

1. 13, 17, 21, 25,...

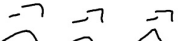


$a_1 = 13$

$a_n = a_{n-1} + 4$

Write a recursive formula for this sequence.

2. 50, 43, 36, 29, ...

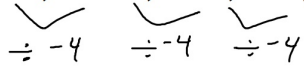


$a_1 = 50$

$a_n = a_{n-1} - 7$

Write a recursive formula for each sequence.

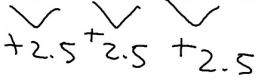
1. 1664, - 416, 104, -26, ...



$a_1 = 1664$

$a_n = (a_{n-1}) \cdot (-\frac{1}{4})$

2. 13.5, 16, 18.5, 21, ...



$a_1 = 13.5$

$a_n = a_{n-1} + 2.5$

Explicit Formula

A formula that allows you to find any term (a_n) by using it's term # (n).

The formula must use
n=1 to find the 1st term
n=2 to find the 2nd term
n=3 to find the 3rd term....

Explicit Formula Example:

Find the 1st, 5th, and 10th term in this sequence.

$a_n = 2n^2 - 1$

$a_1 = 2(1)^2 - 1 = 1$

$a_5 = 2(5)^2 - 1 = 49$

$a_{10} = 2(10)^2 - 1 = 199$

Find the 1st, 5th, and 10th term in this sequence.

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

$a_1 = (1+1)(3)^{1-1} = 2 \cdot 3^0 = 2 \cdot 1 = 2$

$a_5 = (5+1)(3)^{5-1} = 6(3)^4 = 486$

$a_{10} = (10+1)(3)^{10-1} = 11(3)^9 = 216513$

Write an explicit formula for this sequence.

n=	1	2	3	4
1.	3	9	27	81,...
	3^1	3^2	3^3	3^4

$a_n = 3^n$

Write an explicit formula for this sequence.

$n=$ 1 2 3 4

2. 2, 4, 6, 8,...

$a_n = 2n$

Write an explicit formula for this sequence.

$n=$ 1 2 3 4

3. 20, 30, 40, 50,...

$2(10)$ $3(10)$ $4(10)$ $5(10)$

$a_n = (10)(n+1)$

Write an explicit formula for this sequence.

$n=1$ 2 3 4

4. 10, 40, 90, 160 ...

$1(10)$ $4(10)$ $9(10)$ $16(10)$

$a_n = (10)(n^2)$

You can now finish Hwk #29

Sec 11-1

~~Due Monday~~ Tomorrow for you!

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Problems 4-7, 13, 14, 18, 19, 34, 35, 46, 47