Aim: What is an arithmetic sequence?

HW
pg 250 #8,14,33,34
pg 256 #6,7,11,13

Do Now:

If $f(n) = 3(n - 1) + 2$
find:
$f(1)$

$f(2)$

$f(3)$

May 6-2:57 PM

A sequence is an ordered list of numbers

)out sequences that have patterns!

A **finite sequence** contains a finite(limited) number of terms (you can count them).
Example: 1, 4, 7, 10, 13

An **infinite sequence** contains an infinite number of terms (you cannot count them).
Example: 1, 4, 7, 10, 13, . . .

Sequence Notation:

a represents the first term, a represents the second term, and so on...

1, 4, 7, 10, 13, 16...

a_n represents the *nth* term of the sequence

Arithmetic Sequence a sequence of values that follows a pattern of **adding a fixed amount**

The fixed amount is called the **common difference, *d*,**

May 6-3:06 PM

1) Using the sequence
Find the common difference d and a :

a_1 a_2 a_3 a a_5 a_6

1, 4, 7, 10, 13, 16...

$1 = a_1 = 1 + 3(0)$

$4 = a_2 = 1 + 3(1)$

$7 = a_3 = 1 + 3(2)$

$10 = a_4 = 1 + 3(3)$

so...

$a = 1 + 3(n - 1)$

What is the 26th term of this arithmetic sequence?

IN GENERAL: Must Memorize
To **find any term** of an **arithmetic sequence:**

$$a_n = a_1 + d(n - 1)$$

May 6-3:44 PM

2) For the arithmetic sequence
100, 92, 84, 76…
find : a) the common difference
b) the 20^{th} term of the sequence

3) Given an arithmetic sequence 3,6,9,12…
a. Write the n^{th} term formula
b. Find the value of 12^{th} term

May 6-4:14 PM

Recursive Definition:

A formula that allows any term in the sequence to be computed from the previous term.

4) Given the sequence: -5, -1, 3, 7, 11...

a) Write a general expression for a_n

b) Write a recursive definition for a_n

IN GENERAL:
The **recursive** formula for an **arithmetic sequence:**

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

5) Find the first four terms of a the recursive sequence defined below:

$$a_1 = 4$$
$$a_n = a_{n-1} + n$$

May 6-4:15 PM

6) Write the first six terms of the arithmetic sequence that has 12 for the first term and 42 for the six term.

7) If 4 and 28 are the 1^{st} and 5^{th} terms of an arithmetic sequence, find the 2^{nd}, 3^{rd} and 4^{th} terms of the sequence.

May 6-4:41 PM

May 6-6:21 PM