Bell Ringer

Tuesday 12/3

1. Find the common ratio of the geometric sequence

36, 6, 1, 1/6, ... $r = \frac{1}{6}$

0.1, 1, 10, 100, ... $r = 10$

-162, 54, -18, 6, ... $r = -\frac{1}{3}$

2. Write an equation for the nth term of the geometric sequence. Then find a_{12}

0.6, -3, 15, -75, ...

$a_n = 0.6(-5)^{n-1}$

$a_{12} = 0.6(-5)^{11}$

$-29{,}296{,}875$

0.1, 0.9, 8.1, 72.9, ...

$a_n = 0.1(9)^{n-1}$

$a_{12} = 0.1(9)^{11}$

$3{,}138{,}105{,}961$

Week #2 Packet due today - turn in!

Determine if the sequence is arithmetic, geometric or neither. Justify.

1, −16, −33, −50,

A $d = -17$

$-39, -13, -\frac{13}{3}, -\frac{13}{9}, \ldots$

G: $r = \frac{1}{3}$

−1, −8, −64, −512,

G: $r = 8$

5, 16, 27, 38,

+11 +11 +11

A: $d = 11$

Essential Question

How can you define a sequence recursively?

Recursive Equation for an Arithmetic Sequence

$a_1 =$ ____, $a_n = a_{n-1} + d$

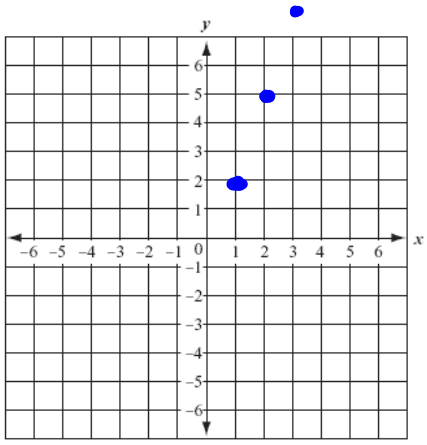
25, 20, 15, 10, ...

$a_1 = 25$, $a_n = a_{n-1} - 5$

x: 1 2 3 4

y: 2, 5, 8, 11, ...

$a_1 = 2$, $a_n = a_{n-1} + 3$



Recursive Equation for a Geometric Sequence?

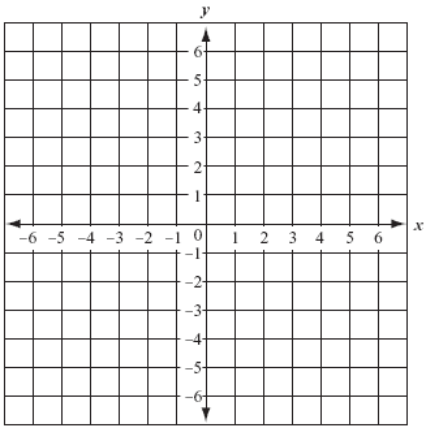
$a_1 =$ ____

2, 4, 8, 16, ...

$a_1 = 2, \ a_n = 2a_{n-1}$

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

$a_1 = \frac{1}{3}, \ a_n = (-3)a_{n-1}$



Recursive Equation for a Geometric Sequence?

$a_1 =$ ____, $a_n = r \cdot a_{n-1}$

Write the first four terms of each sequence.

a. $a_1 = 2,\ a_n = a_{n-1} + 3$

2, 5, 8, 11, ...
a_1 a_2 a_3 a_4

b. $a_1 = 1,\ a_n = 3a_{n-1}$

1, 3, 9, 27, ...

Write a recursive rule for each sequence.

a. −30, −18, −6, 6, 18, . . . $a_1 = -30, a_n = a_{n-1} + 12$

+12 +12 +12 +12

b. 500, 100, 20, 4, 0.8, . . . $a_1 = 500, a_n = \frac{1}{5} a_{n-1}$

$\times \frac{1}{5}$ $a_{n-1}\left(\frac{1}{5}\right)$

Explicit Rules:

Arithmetic

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

$a_1 + (n-1)d$

Geometric

$a_n = a_1(r)^{n-1}$

Write an explicit rule for each recursive rule.

a. $a_1 = 25$, $a_n = a_{n-1} - 10$

$a_n = 25 - 10(n-1)$

$25 - 10n + 10$

$a_n = 35 - 10n$

* **b.** $a_1 = 19.6$, $a_n = -0.5a_{n-1}$

$a_n = 19.6(-0.5)^{n-1}$

Write a recursive rule for each explicit rule.

a. $a_n = -2n + 3$ $a_1 = 1,\ d = -2$

$a_1 = 1,\ a_n = a_{n-1} - 2$

n	a_n	
1	1	-2
2	-1	-2
3	-3	

b. $a_n = -3(2)^{n-1}$

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

WHITEBOARDS!

Write a recursive rule for the sequence.

1.3, 2.6, 3.9, 5.2, 6.5, . . .

Write a recursive rule for the sequence.

Then write the next three terms of the sequence.

5, 6, 11, 17, 28, . . .

Write an explicit rule for the recursive rule.

$a_1 = 13,\ a_n = -3a_{n-1}$

Write a recursive rule for the explicit rule.

$$a_n = -n + 1$$

Write the first four terms of the sequence.

$a_1 = 0.7,\ a_n = 10a_{n-1}$

Write a recursive rule for the sequence.

4, 20, 100, 500, 2500, . . .

Write a recursive rule for the sequence.

Then write the next three terms of the sequence.

$-3, -4, -7, -11, -18, \ldots$

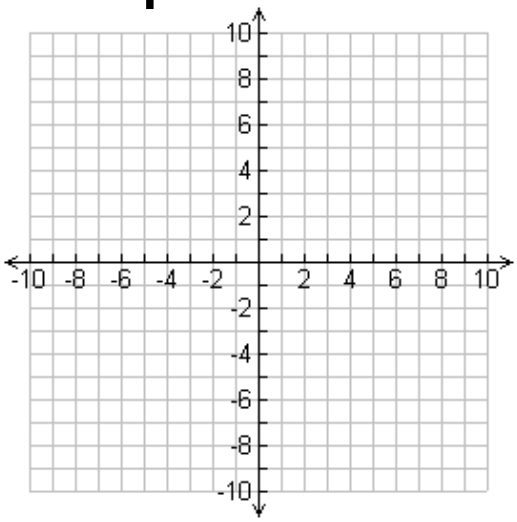
Write a recursive rule for the explicit rule.

$$a_n = -2.5(4)^{n-1}$$

Write the first four terms of the sequence.

Then graph the sequence.

$$a_1 = -10,\ a_n = \frac{1}{2} a_{n-1}$$



Write the first four terms of the sequence.

$a_1 = -7.5,\ a_n = a_{n-1} + 2.5$

Write a recursive rule for the sequence.

128, −32, 8, −2, 0.5, . . .

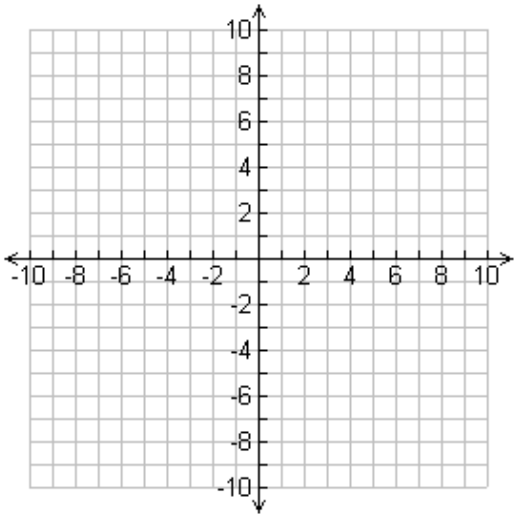
Write an explicit rule for the recursive rule.

$$a_1 = -45,\ a_n = a_{n-1} + 20$$

Write the first four terms of the sequence.

Then graph the sequence.

$a_1 = 0,\ a_n = a_{n-1} - 2$



Write a recursive rule for the sequence.

8, 3, −2, −7, −12, . . .

Write a recursive rule for the height of the sunflower over time.

Challenge:

1, 1, 2, 3, 5, 8, 13, 21, 34

a_1 a_2

a. Write a recursive rule for the sequence.

$a_1 = 1$ $a_n = a_{n-1} + a_{n-2}$

$a_2 = 1$

b. Write the next three terms of the sequence.

13, 21, 34

Challenge:

$$1, 1, 0, -1, -1, 0, 1, 1, \ldots$$

a. Write a recursive rule for the sequence.

b. Write the next three terms of the sequence.

Challenge:

$$4, 3, 1, 2, -1, 3, -4, \ldots$$

a. Write a recursive rule for the sequence.

b. Write the next three terms of the sequence.

due Thursday
6.6 hw pg 318-320 #s 1, 2, 3-37 odd