ALGEBRA 2 (LESSON 12.2)

How is the following sequence different from what we were looking at yesterday?

n	1	2	3	4	5
fn	32	16	8	4	2

GEOMETRIC SEQUENCE - the RATIO of any term to the previous term is constant (common ratio)

Recursive Formula: $f(1) = 32$, $f(n) = \frac{1}{2} f(n-1)$, $n > 1$

Explicit Formula: $f(n) = 32\left(\frac{1}{2}\right)^{n-1}$ (REMEMBER: you can choose any point)

Given the following sequence, find the Recursive and Explicit formulas and answer the following questions.

n	0	1	2	3	4
f(n)	3	$3\sqrt{7}$	21	$21\sqrt{7}$	147

Recursive: $f(0) = 3$, $f(n) = \sqrt{7} f(n-1)$, $n > 0$

Explicit: $f(n) = 3(\sqrt{7})^{n-0}$

$f(n) = 3(\sqrt{7})^n$

(A). Is $987\sqrt{7}$ a part of the sequence?

$987\sqrt{7} = 3(\sqrt{7})^n$

$329\sqrt{7} = (\sqrt{7})^n$

$\log(329 \cdot \sqrt{7}) = n \log(\sqrt{7})$

$\log 329 + \log\sqrt{7} = n \log\sqrt{7}$

(B). Find the first term to exceed 5000.

$5000 = 3(\sqrt{7})^n$

$\frac{5000}{3} = (\sqrt{7})^n$

$\log\frac{5000}{3} = n \log(\sqrt{7})$

$n = 7.625$

8th term

You invest ₦4,000 compounded monthly at 8.0% APR for 5 years.

(A). Is this geometric?

$$V(t) = 4000\left(1+\frac{0.08}{12}\right)^{5\cdot 12}$$

YES

(B). what is the growth measure? $\left(1+\frac{0.08}{12}\right)$

(C). Find the 17th term in the sequence?

$$f(17) = 4000\left(1+\frac{0.08}{12}\right)^{17-0}$$

$$= 4000\left(1+\frac{0.08}{12}\right)^{17}$$

$$= 4478.34$$

$f(17) =$ ₦4,478.34 (17th compound of investment)

↳ month