Recursive Formula for a Geometric Sequence:

3.5, 7, 14, 28...

1st: Find r. $r = \frac{14}{7} = 2$

$a_1 = 3.5$

$a_n = a_{n-1} \cdot 2$

The recursive formula for ANY geometric sequence:

a_1 = Given First Term

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

Write a recursive formula for this sequence:

3, -12, 48, -192, ...

Geometric

$r = -4$

$a_1 = 3$

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

Write a recursive formula for this sequence:

5346, 1782, 594, 198, ...

Geometric

$r = \frac{1782}{5346} = \frac{1}{3}$

$a_1 = 5346$

$a_n = a_{n-1} \cdot \frac{1}{3}$ or $a_{n-1} \div 3$

Explicit Formula for a Geometric Sequence:

11, 66, 396, 2376, ...

Find r. $r = \frac{66}{11} = 6$

$a_1 = 11$
$a_2 = 11(6)$
$a_3 = 11(6)(6)$
$a_4 = 11(6)(6)(6)$
$a_5 = 11(6)(6)(6)(6)$

Explicit Formula is:

$a_n = 11(6)^{n-1}$

Explicit Formula for ANY geometric sequence:

$a_n = a_1 \cdot r^{n-1}$

Write an explicit formula for this sequence.

$\cdot(2.5)$

8, 20, 50, 125, ...

$\cdot(2.5)$ $\cdot(2.5)$

Geometric
$r = 2.5$

$$a_n = 8\,(2.5)^{n-1}$$

Write an explicit formula for this sequence.

22032, 3672, 612, 102, ...

$r = \dfrac{102}{612} = \dfrac{1}{6}$

Geometric $r = \dfrac{1}{6}$

$$a_n = 22032\left(\tfrac{1}{6}\right)^{n-1}$$

Find the 14th term for this sequence:

3, -6, 12, -24, ...

Geometric $r = -2$

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

$$a_{14} = 3(-2)^{14-1} = \boxed{-24,576}$$

Find the next 3 terms in each sequence then state if it's Arithmetic, Geometric, or Neither?

1. 3, 6, 24, 144, ...

$\times 4$ $\times 2$ $\times 6$

1152, 11520, 138240

Neither: Multiplying by the next even number.

2. 11, 22, 33, 44, ...

Arithmetic: Adding 11

55, 66, 77

3. 16, 24, 36, 54, ...

$\cdot(1.5)$ $\cdot(1.5)$ $\cdot(1.5)$

81, 121.5, 182.25

Geometric: Multiplying by 1.5

4. 14, 17, 26, 53, ...

$+3$ $+9$ $+27$ $+8$ $+729$

134, 377, 1106

$+243$

Neither: adding the next power of three.

You can now finish Hwk #31

Sec 11-3   Due tomorrow

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Problems 1-3, 6-8, 14, 23, 24, 31-34, 38, 44