

Homework 4.2 Geometric Sequences

Generalize the sequence. Identify whether it is a common difference and use symbols to express the generalization.

Example ---- 5, 10, 15, 20, 25, 30, ...

Answer: Adding 5, $d = 5$.

1) 9, -18, 36, -72, 144, -288, 576...

Answer: _____

2) 45, 135, 405, 1215, 3645, 10935, ...

Answer: _____

3) 75, 375, 1875, 9375, 46875, ...

Answer: _____

4) 8, 32, 128, 512, 2048, 8192, ...

Answer: _____

5) 3, 30, 300, 3000, 30000, 300000, 3000000, ...

Answer: _____

Identify the a_3 , a_5 , and a_{12} terms in each sequence

6) 9, -18, 36, -72, 144, -288, 576...

7) 45, 135, 405, 1215, 3645, 10935, ...

8) 75, 375, 1875, 9375, 46875, ...

9) 8, 32, 128, 512, 2048, 8192, ...

10) 3, 30, 300, 3000, 30000, 300000, 3000000, ...

Write the recursive formula for each sequence.

Formula: $a_1 = \underline{\hspace{1cm}}$, $a_n = (a_{n-1})(r)$

11) 9, -18, 36, -72, 144, -288, 576...

12) 45, 135, 405, 1215, 3645, 10935, ...

13) 75, 375, 1875, 9375, 46875, ...

14) 8, 32, 128, 512, 2048, 8192, ...

15) 3, 30, 300, 3000, 30000, 300000, 3000000, ...

Write the explicit formula for each sequence and find a_{58} .

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

16) 9, -18, 36, -72, 144, -288, 576...

17) 45, 135, 405, 1215, 3645, 10935, ...

18) 75, 375, 1875, 9375, 46875, ...

19) 8, 32, 128, 512, 2048, 8192, ...

20) 3, 30, 300, 3000, 30000, 300000, 3000000, ...

Using the recursive formula, find the explicit formula.

21) $a_1 = 4, a_n = (a_{n-1})5$

22) $a_1 = -2, a_n = (a_{n-1})7$

23) $a_1 = 3, a_n = (a_{n-1})11$

Using the explicit formula, find the recursive formula.

24) $a_n = 4(3)^{n-1}$

25) $a_n = 2(5)^{n-1}$

26) $a_n = 5(15)^{n-1}$

27) $a_n = 10(3)^{n-1}$