C9L3 Notes

Arithmetic and Geometric Sequence Review

State whether the sequence is arithmetic, geometric, both, or neither.

1. 51, 62, 73, 84, …

+11 +11 +11

ARITHMETIC

BECAUSE THE SAME QUANTITY IS ADDED TO EACH TERM.

2. 3, 18, 108, 648, …

·6 ·6 ·6

GEOMETRIC

BECAUSE THE SAME QUANTITY IS MULTIPLIED BY EACH TERM.

3. 680, 680, 680, 680, …

BOTH

4. 1, 2, 3, 5, …

+1 +1 +2

NEITHER

Find the first four terms of the sequence defined, where n represents the position of a term in the sequence. Start with n = 1.

5. $4n - 7$

$4(1)-7=-3$
$4(2)-7=1$
$4(3)-7=5$
$4(4)-7=9$

$-3, 1, 5, 9$

6. 5^n

$5^1=5$
$5^2=25$
$5^3=125$
$5^4=6125$

$5, 25, 125, 6125$

7. $2(3)^n$

$2(3)^1=6$
$2(3)^2=18$
$2(3)^3=54$
$2(3)^4=162$

$6, 18, 54, 162$

8. $-5n^2 + 7n - 4$

$-5(1)^2+7(1)-4=-2$
$-5(2)^2+7(2)-4=-10$
$-5(3)^2+7(3)-4=-28$
$-5(4)^2+7(4)-4=-56$

$-2, -10, -28, -56$

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

$-5(2)^{1-1}=-5$
$-5(2)^{2-1}=-10$
$-5(2)^{3-1}=-20$
$-5(2)^{4-1}=-40$

$-5, -10, -20, -40$

10. $a_n = 27\left(\frac{3}{5}\right)^{n-1}$

$27\left(\frac{3}{5}\right)^{1-1}=27$
$27\left(\frac{3}{5}\right)^{2-1}=\frac{81}{5}$
$27\left(\frac{3}{5}\right)^{3-1}=\frac{243}{25}$
$27\left(\frac{3}{5}\right)^{4-1}=\frac{729}{125}$

$27, \frac{81}{5}, \frac{243}{25}, \frac{729}{125}$

State the missing number of the sequence.

11. 1, 4, 9, 16, 25, 36

$1^2\ 2^2\ 3^2\ 4^2\ 5^2\ 6^2$

12. 4, 6, 9, 13, 18, 24, 31

+2 +3 +4 +5 +6 +7

13. 5, 6, 9, 14, 21, 30, 41

+1 +3 +5 +7 +9 +11

14. -33, -24, -15, -6, 3

+9 +9

15. 4, -40, 400, -4000, 40000

·-10 ·-10 ·-10

16. -1, -2, -4, -8, -16, -32

·2 ·2 ·2

17. 1, 1, 2, 3, 5, 8, 13, 21, 34

$1+1=2$
$1+2=3$
$2+3=5$
$3+5=8$
$5+8=13$
$8+13=21$
$13+21=34$

18. 3, 10, 29, 66, 127, 218, 345, 514

$1^3+2=3$
$2^3+2=10$
$3^3+2=29$
$4^3+2=66$
$5^3+2=127$
$6^3+2=218$
$7^3+2=343$
$8^3+2=514$