

DIRECTIONS: Find a formula for the n th term of each geometric sequence.

1. 2, 6, 18, 54, ...

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

3. $1, \sqrt{2}, 2, 2\sqrt{2}, \dots$

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

5. 64, -48, 36, -27, ...

$$a_n = 64(-3/4)^{n-1}$$

2. 500, 100, 20, 4, ...

$$a_n = 500(1/5)^{n-1}$$

4. 8, 12, 18, 27, ...

$$a_n = 8(3/2)^{n-1}$$

6. -1, 0.1, -0.01, 0.001, ...

$$a_n = -1(-.01)^{n-1}$$

DIRECTIONS: Find the specified term of each geometric sequence.

7. 2, 6, 18, 54, ...; a_{10}

$$39,366$$

9. 320, 80, 20, 5, ...; a_8

$$5/256$$

11. -10, 50, -250, 1250, ...; a_9

$$-3,906,250$$

8. 5, 10, 20, 40, ...; a_{12}

$$10,240$$

10. 1, -3, 9, -27, ...; a_8

$$-2187$$

12. 40, -20, 10, -5, ...; a_{11}

$$5/128$$

DIRECTIONS: Find the geometric mean between each pair of numbers.

13. 2, 8

$$4$$

14. $\frac{1}{12}, \frac{1}{18}$

$$\sqrt{36}/6$$

15. $\sqrt{3}, 3\sqrt{3}$

$$3$$

16. -18, -36

$$-18\sqrt{2}$$

DIRECTIONS: Write each series in expanded form and find the sum.

17. $\sum_{n=1}^6 2^n$

$$2 + 4 + 8 + 16 + 32 + 64 = 126$$

19. $\sum_{j=0}^5 \frac{(-1)^j}{j+1}$

$$1 + \frac{-1}{2} + \frac{1}{3} + \frac{-1}{4} + \frac{1}{5} + \frac{-1}{6} = \frac{37}{60}$$

21. $\sum_{n=1}^4 (-n)^{n+1}$

$$1 + -8 + 81 + -1024 = -950$$

18. $\sum_{m=0}^4 3^m$

$$1 + 3 + 9 + 27 + 81 = 121$$

20. $\sum_{k=0}^3 4^{-k}$

$$1 + \frac{1}{4} + \frac{1}{16} + \frac{1}{64} = \frac{85}{64} \text{ or } 1\frac{21}{64}$$

DIRECTIONS: Find the sum of the first n terms of each geometric series.

22. $1 + 4 + 16 + 64 + \dots; n = 14$

$$89,478,485$$

23. $1 + 9 + 81 + 729 + \dots; n = 10$

$$435,848,050$$

24. $7 + (-21) + 63 + (-189) + \dots; n = 18$

$$-677,985,854$$

25. $2 + 10 + 50 + 250 + \dots; n = 9$

$$976,562$$