

Evaluate each geometric series described.

1)  $-1 - 2 - 4 - 8 \dots, n = 6$

2)  $-2 - 4 - 8 - 16 \dots, n = 9$

3)  $\sum_{m=1}^7 6^{m-1}$

4)  $\sum_{i=1}^{10} -2 \cdot 2^{i-1}$

Determine the number of terms  $n$  in each geometric series.

5)  $a_1 = -4, r = 6, S_n = -172$

6)  $a_1 = -3, r = 6, S_n = -27993$

7)  $\sum_{k=1}^n -3 \cdot (-2)^{k-1} = -129$

8)  $\sum_{k=1}^n -4 \cdot (-5)^{k-1} = -2084$

Determine if each geometric series converges or diverges.

9)  $4 - 8 + 16 - 32 \dots$

10)  $6 - \frac{15}{2} + \frac{75}{8} - \frac{375}{32} \dots$

Evaluate each infinite geometric series described.

11)  $\sum_{k=1}^{\infty} 128 \cdot \left(\frac{1}{4}\right)^{k-1}$

12)  $\sum_{n=1}^{\infty} -3125 \cdot \left(-\frac{1}{5}\right)^{n-1}$

13)  $\sum_{i=1}^{\infty} 9.2 \cdot 0.5^{i-1}$

14)  $\sum_{i=1}^{\infty} \frac{6}{5} \cdot \left(-\frac{1}{5}\right)^{i-1}$

Evaluate each arithmetic series described.

15)  $\sum_{m=1}^{50} (3m - 3)$

16)  $\sum_{n=1}^{40} (2n + 6)$

Determine the number of terms  $n$  in each arithmetic series.

17)  $\sum_{i=1}^n (5i - 1) = 265$

18)  $\sum_{i=1}^n (4i - 8) = 216$

Find the explicit formula.

19)  $21, 1, -19, -39, \dots$

20)  $-25, -28, -31, -34, \dots$

Given two terms in an arithmetic sequence find the explicit formula.

21)  $a_{19} = -172$  and  $a_{30} = -260$

22)  $a_{14} = -94$  and  $a_{40} = -250$

23)  $a_{19} = 3616$  and  $a_{40} = 7816$

24)  $a_{19} = 32$  and  $a_{30} = 76$

Find the explicit formula.

25)  $-1, -3, -9, -27, \dots$

26)  $-4, 16, -64, 256, \dots$

Given two terms in a geometric sequence find the first five terms.

27)  $a_4 = -125$  and  $a_6 = -3125$

28)  $a_4 = -648$  and  $a_6 = -23328$

29)  $a_5 = -162$  and  $a_2 = -6$

30)  $a_6 = 128$  and  $a_2 = 8$

## Answers to

- |                                |                                 |                             |                        |
|--------------------------------|---------------------------------|-----------------------------|------------------------|
| 1) -63                         | 2) -1022                        | 3) 55987                    | 4) -2046               |
| 5) 3                           | 6) 6                            | 7) 7                        | 8) 5                   |
| 9) Diverges                    | 10) Diverges                    | 11) $\frac{512}{3}$         | 12) $-\frac{15625}{6}$ |
| 13) 18.4                       | 14) 1                           | 15) 3675                    | 16) 1880               |
| 17) 10                         | 18) 12                          | 19) $a_n = 41 - 20n$        | 20) $a_n = -22 - 3n$   |
| 21) $a_n = -20 - 8n$           | 22) $a_n = -10 - 6n$            | 23) $a_n = -184 + 200n$     | 24) $a_n = -44 + 4n$   |
| 25) $a_n = -3^{n-1}$           | 26) $a_n = -4 \cdot (-4)^{n-1}$ | 27) -1, -5, -25, -125, -625 |                        |
| 28) -3, -18, -108, -648, -3888 |                                 | 29) -2, -6, -18, -54, -162  |                        |
| 30) 4, 8, 16, 32, 64           |                                 |                             |                        |