

Find the sum of each geometric series.

1.  $1 + 3 + 9 + 27 + 81$

2.  $1 - 2 + 4 - 8 + 16 - 32$

3.  $2401 - 343 + 49 - \dots$  to 5 terms

4.  $a_1 = 81$ ,  $r = \frac{1}{3}$ , and  $n = 7$

5.  $2 + 4 + 8 + \dots$  to ten terms

6.  $a_1 = 10$ ,  $r = 3$ ,  $n = 6$

7.  $a_n = -\frac{3}{2}$ ,  $n = 6$ ,  $r = -\frac{1}{2}$

8.  $a_1 = 243$ ,  $r = -\frac{2}{3}$ ,  $n = 5$

9.  $\sum_{n=0}^3 3^{-n}$

10.  $\sum_{n=0}^4 8\left(-\frac{1}{2}\right)^{n-1}$

Use sigma notation to express each geometric series.

11.  $54 + 18 + 6 + 2 + \frac{2}{3} + \frac{2}{9}$

12.  $16 - 24 + 36 - 54 + 81 - 121.5 + 182.25$