

# 12-3 Practice

## Geometric Series

Evaluate each finite series for the specified number of terms.

1.  $40 + 20 + 10 + \dots; n = 10$

2.  $4 + 12 + 36 + \dots; n = 15$

3.  $15 + 12 + 9.6 + \dots; n = 40$

4.  $27 + 9 + 3 + \dots; n = 100$

5.  $0.2 + 0.02 + 0.002 + \dots; n = 8$

6.  $100 + 200 + 400 + \dots; n = 6$

7. This month, your friend deposits \$400 to save for a vacation. She plans to deposit 10% more each successive month for the next 11 months. How much will she have saved after the 12 deposits?

Determine whether each infinite geometric series *diverges* or *converges*. State whether each series has a sum.

8.  $3 + \frac{3}{2} + \frac{3}{4} + \dots$

9.  $4 + 2 + 1 + \dots$

10.  $17 + 15.3 + 13.77 + \dots$

11.  $6 + 11.4 + 21.66 + \dots$

12.  $-20 - 8 - 3.2 - \dots$

13.  $50 + 70 + 98 + \dots$

Evaluate each infinite geometric series.

14.  $8 + 4 + 2 + 1 + \dots$

15.  $1 + \frac{1}{3} + \frac{1}{9} + \frac{1}{27} + \dots$

16.  $120 + 96 + 76.8 + 61.44 + \dots$

17.  $1000 + 750 + 562.5 + 421.875 + \dots$

Determine whether each series is *arithmetic* or *geometric*. Then evaluate the series for the specified number of terms.

18.  $2 + 5 + 8 + 11 + \dots; n = 9$

19.  $\frac{1}{8} + \frac{1}{16} + \frac{1}{32} + \frac{1}{64} + \dots; n = 8$

20.  $-3 + 6 - 12 + 24 - \dots; n = 10$

21.  $-2 + 2 + 6 + 10 + \dots; n = 12$

22.  $4 + 8 + 16 + 32 + \dots; n = 15$

23.  $5 + 10 + 15 + 20 + \dots; n = 20$

Evaluate each infinite series that has a sum.

24.  $\sum_{n=1}^{\infty} 5 \left(\frac{2}{3}\right)^{n-1}$

25.  $\sum_{n=1}^{\infty} (-2.1)^{n-1}$

26.  $\sum_{n=1}^{\infty} \left(-\frac{1}{2}\right)^{n-1}$

27.  $\sum_{n=1}^{\infty} 2 \left(\frac{5}{3}\right)^{n-1}$

28. Suppose your business made a profit of \$5500 the first year. If the profit increased 20% per year, find the total profit over the first 5 yr.