

REVIEW WORKSHEET SECTIONS 11.3-11.4

****BE SURE TO SHOW ALL WORK ON A SEPARATE SHEET OF PAPER****

SECTION 11.3

Decide whether the sequence is *arithmetic*, *geometric*, or *neither*. Explain your answer.

1. 1, -2, -5, -8, ... 2. $-3, \frac{3}{4}, -\frac{3}{16}, \frac{3}{64}, \dots$ 3. $-2, \frac{9}{2}, -7, \frac{19}{2}, \dots$

Find the common ratio of the geometric sequence.

4. 5, 15, 45, 135, ... 5. 6, -24, 96, -384, ... 6. $\frac{1}{3}, \frac{2}{9}, \frac{4}{27}, \frac{8}{81}, \dots$

Write a rule for the *n*th term of the geometric sequence. Then find a_8 .

7. 4, 2, 1, $\frac{1}{2}, \dots$ 8. $1, \frac{4}{9}, \frac{16}{81}, \frac{64}{729}, \dots$ 9. 2, -8, 32, -128, ...

Write a rule for the *n*th term of the geometric sequence.

10. $a_1 = 8, r = \frac{1}{2}$ 11. $a_1 = -4, r = \frac{1}{8}$ 12. $a_3 = 8, a_6 = -64$

Graph the geometric sequence.

13. $a_n = 2(3)^{n-1}$ 14. $a_n = 2(\frac{1}{2})^{n-1}$ 15. $a_n = 5(1.1)^{n-1}$

For part (a), find the sum of the first *n* terms of the geometric series. For part (b), find *n* for the given sum S_n .

16. $1 + (-4) + 16 + (-64) + \dots$ 17. $-2 + 3 + (-\frac{9}{2}) + \frac{27}{4} + \dots$
 a. $n = 8$ b. $S_n = -819$ a. $n = 14$ b. $S_n = -31.55$

Find the sum of the series.

18. $\sum_{i=1}^8 (-3)^{i-1}$ 19. $\sum_{i=1}^{10} -2(-\frac{3}{2})^{i-1}$ 20. $\sum_{i=0}^{11} 7(\frac{1}{5})^i$

SECTION 11.4

Decide whether the infinite geometric series has a sum. Explain why or why not.

1. $\sum_{n=0}^{\infty} -4(\frac{1}{4})^n$ 2. $\sum_{n=1}^{\infty} \frac{2}{3}(\frac{4}{3})^{n-1}$ 3. $\sum_{n=0}^{\infty} 6(2)^n$ 4. $\sum_{n=1}^{\infty} (-\frac{2}{9})^{n-1}$

Find the sum of the infinite geometric series if it has one.

5. $\sum_{n=0}^{\infty} 3(\frac{1}{2})^n$ 6. $\sum_{n=0}^{\infty} 3(\frac{4}{3})^n$ 7. $\sum_{n=0}^{\infty} 2(-\frac{1}{2})^n$ 8. $\sum_{n=1}^{\infty} 5(\frac{1}{10})^{n-1}$
 9. $\sum_{n=1}^{\infty} 7(-\frac{3}{4})^{n-1}$ 10. $\sum_{n=0}^{\infty} (0.9)^n$ 11. $\sum_{n=0}^{\infty} (-0.4)^n$ 12. $\sum_{n=0}^{\infty} 2(0.1)^n$

Find the common ratio of the infinite geometric series with the given sum and first term.

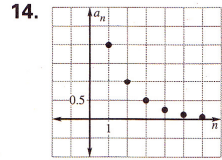
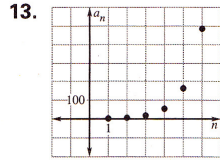
13. $S = 15, a_1 = 3$ 14. $S = 16, a_1 = 12$ 15. $S = \frac{3}{4}, a_1 = 1$
 16. $S = \frac{25}{7}, a_1 = 5$ 17. $S = -9, a_1 = -5$ 18. $S = 2, a_1 = \frac{1}{4}$

Write the repeating decimal as a fraction.

19. 0.666... 20. 0.222... 21. 0.3535...
 22. 0.7474... 23. 0.543543... 24. 36.3636...

11.3 ANSWERS

1. arithmetic; common difference of -3
2. geometric; common ratio of $-\frac{1}{4}$
3. neither; no common ratio or difference
4. 3 5. -4 6. $\frac{2}{3}$ 7. $a_n = 4\left(\frac{1}{2}\right)^{n-1}; \frac{1}{32}$
8. $a_n = 1\left(\frac{4}{9}\right)^{n-1}; \frac{16,384}{4,782,968}$
9. $a_n = 2(-4)^{n-1}; -32,768$ 10. $a_n = 8\left(\frac{1}{2}\right)^{n-1}$
11. $a_n = -4\left(\frac{1}{8}\right)^{n-1}$ 12. $a_n = 2(-2)^{n-1}$



- 15.
16. a. $-13,107$
b. 6
 17. a. about 232.74
b. 9
 18. -1640

19. about 45.33 20. about 14.00

11.4 ANSWERS

1. yes; $|r| = \frac{1}{4}, \frac{1}{4} < 1$ 2. no; $|r| = \frac{4}{3}, \frac{4}{3} > 1$
3. no; $|r| = 2, 2 > 1$ 4. yes; $|r| = \frac{2}{9}, \frac{2}{9} < 1$
5. 6 6. no sum 7. $\frac{4}{3}$ 8. $\frac{50}{9}$ 9. 4 10. 10
11. $\frac{5}{7}$ 12. $\frac{20}{9}$ 13. $\frac{4}{5}$ 14. $\frac{1}{4}$ 15. $-\frac{1}{3}$ 16. $-\frac{2}{5}$
17. $\frac{4}{9}$ 18. $\frac{7}{8}$ 19. $\frac{2}{3}$ 20. $\frac{2}{9}$ 21. $\frac{35}{99}$ 22. $\frac{74}{99}$
23. $\frac{181}{333}$ 24. $\frac{400}{11}$