

11-5 Practice**Infinite Geometric Series**

Find the sum of each infinite geometric series, if it exists.

1. $a_1 = 35, r = \frac{2}{7}$

2. $a_1 = 26, r = \frac{1}{2}$

3. $a_1 = 98, r = -\frac{3}{4}$

4. $a_1 = 42, r = \frac{6}{5}$

5. $a_1 = 112, r = -\frac{3}{5}$

6. $a_1 = 500, r = \frac{1}{5}$

7. $a_1 = 135, r = -\frac{1}{2}$

8. $18 - 6 + 2 - \dots$

9. $2 + 6 + 18 + \dots$

10. $6 + 4 + \frac{8}{3} + \dots$

11. $\frac{4}{25} + \frac{2}{5} + 1 + \dots$

12. $10 + 1 + 0.1 + \dots$

13. $100 + 20 + 4 + \dots$

14. $-270 + 135 - 67.5 + \dots$

15. $0.5 + 0.25 + 0.125 + \dots$

16. $\frac{7}{10} + \frac{7}{100} + \frac{7}{1000} + \dots$

17. $0.8 + 0.08 + 0.008 + \dots$

18. $\frac{1}{12} - \frac{1}{6} + \frac{1}{3} - \dots$

19. $3 + \frac{9}{7} + \frac{27}{49} + \dots$

20. $0.3 - 0.003 + 0.00003 - \dots$

21. $0.06 + 0.006 + 0.0006 + \dots$

22. $\frac{2}{3} - 2 + 6 - \dots$

23. $\sum_{n=1}^{\infty} 3\left(\frac{1}{4}\right)^{n-1}$

24. $\sum_{n=1}^{\infty} \frac{2}{3}\left(-\frac{3}{4}\right)^{n-1}$

25. $\sum_{n=1}^{\infty} 18\left(\frac{2}{3}\right)^{n-1}$

26. $\sum_{n=1}^{\infty} 5(-0.1)^{n-1}$

Write each repeating decimal as a fraction.

27. $0.\overline{6}$

28. $0.0\overline{9}$

29. $0.\overline{43}$

30. $0.\overline{27}$

31. $0.\overline{243}$

32. $0.\overline{84}$

33. $0.\overline{990}$

34. $0.\overline{150}$

35. PENDULUMS On its first swing, a pendulum travels 8 feet. On each successive swing, the pendulum travels $\frac{4}{5}$ the distance of its previous swing. What is the total distance traveled by the pendulum when it stops swinging?

36. ELASTICITY A ball dropped from a height of 10 feet bounces back $\frac{9}{10}$ of that distance. With each successive bounce, the ball continues to reach $\frac{9}{10}$ of its previous height. What is the total vertical distance (both up and down) traveled by the ball when it stops bouncing? (*Hint:* Add the total distance the ball falls to the total distance it rises.)