

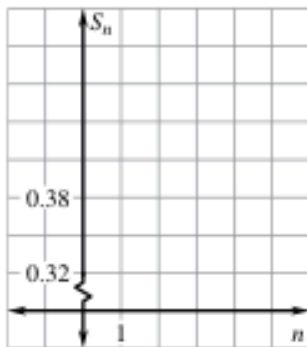
Honors Algebra II

Worksheet 7A

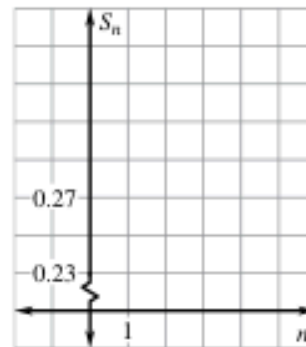
Name _____

For the given series, find and graph the partial sums S_n for $n = 1, 2, 3, 4,$ and 5. Describe what happens to S_n as n increases.

1. $\frac{1}{3} + \frac{1}{9} + \frac{1}{27} + \frac{1}{81} + \frac{1}{243} + \dots$



2. $\frac{1}{4} + \frac{1}{16} + \frac{1}{64} + \frac{1}{256} + \frac{1}{1024} + \dots$



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

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

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

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

6. $\sum_{i=1}^{\infty} \frac{1}{4} \left(\frac{1}{4}\right)^{i-1}$

7. $\sum_{i=1}^{\infty} 4 \left(\frac{1}{4}\right)^{i-1}$

8. $\sum_{i=1}^{\infty} 6 \left(\frac{1}{2}\right)^{i-1}$

9. $\sum_{i=1}^{\infty} \frac{1}{4} (5)^{i-1}$

10. $\sum_{i=1}^{\infty} \left(\frac{1}{5}\right)^{i-1}$

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

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

12. $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \frac{1}{32} + \dots$

13. $12 + 4 + \frac{4}{3} + \frac{4}{9} + \frac{4}{27} + \dots$

14. $6 + 3 + \frac{3}{2} + \frac{3}{4} + \frac{3}{8} + \dots$

15. $25 + 5 + 1 + \frac{1}{5} + \frac{1}{25} + \dots$

Write the repeating decimal as a fraction in lowest terms.

16. $0.111 \dots$

17. $0.121212 \dots$

18. $0.555 \dots$

19. $0.414141 \dots$

20. $8.888 \dots$

21. $43.434343 \dots$

- 22. Bobble Head** A bobble head doll's head is pulled to one side and released. The head swings back and forth like a pendulum. On the first swing, the distance traveled by the doll's forehead is 20 millimeters. On each subsequent swing, the distance is 98% of the previous swing. What is the total distance traveled by the doll's forehead by the time the head comes to rest?