Name_____ Date _____

7.4 Practice A

In Exercises 1 and 2, consider the infinite geometric series. Find the partial sums S_n for $n = 1, 2, 3, 4,$ and 5. Then describe what happens to S_n as n increases.

1. $\frac{1}{3} + \frac{1}{6} + \frac{1}{12} + \frac{1}{24} + \frac{1}{48} + \ldots$

2. $5 + \frac{10}{3} + \frac{20}{9} + \frac{40}{27} + \frac{80}{81} + \ldots$

In Exercises 3–6, find the sum of the infinite geometric series, if it exists.

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

4. $\sum_{n=1}^{\infty} 3\left(\frac{5}{4}\right)^{n-1}$

5. $3 + \frac{9}{5} + \frac{27}{25} + \frac{81}{125} + \ldots$

6. $-6 - 4 - \frac{8}{3} - \frac{16}{9} - \ldots$

7. Describe and correct the error in finding the sum of the infinite geometric series.

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

For this series, $a_1 = \frac{5}{2}$ and $r = \frac{1}{3}$.

Because $|a_1| \geq 1$, this series does not have a sum.

8. You push your younger sister on a swing one time and then allow your sister to swing freely. On the first swing, your sister travels a distance of 8 feet. On each successive swing, your sister travels 80% of the distance of the previous swing. What is the total distance your sister swings?

In Exercises 9–11, write the repeating decimal as a fraction in simplest form.

9. 0.18181818…

10. 0.5555…

11. 1.6666…

12. A company had a profit of $500,000 in its first year. Since then, the company's profit has decreased by 6% each year. Assuming this trend continues, what is the total profit the company can make over the course of its lifetime?