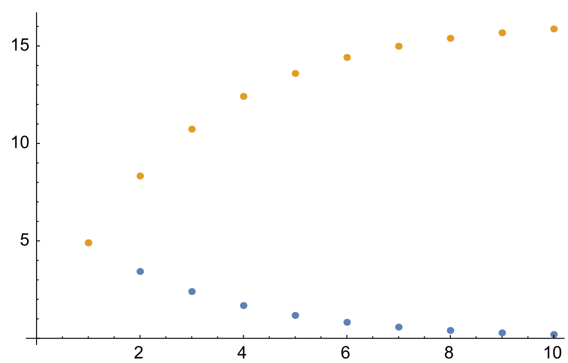
Find at least 10 partial sums of the series. Graph both the sequence of terms and the sequence of partial sums on the same screen. Does it appear that the series is convergent or divergent? If it is convergent, find the sum. If it is divergent, explain why.[1]

$$\sum_{n=1}^{\infty} \frac{7^{n+1}}{10^n}$$

Let's make a table of the terms of the series and the partial sums.

n	a_n	partial sum	s_n
1	$7 \cdot \frac{7^1}{10^1} = 4.9000$	$7 \cdot \frac{7}{10}$	4.9000
2	$7 \cdot \frac{7^2}{10^2} = 3.4300$	$7 \cdot \frac{7}{10} + 7 \cdot \frac{7^2}{10^2}$	8.3300
3	$7 \cdot \frac{7^3}{10^3} = 2.4010$	$7 \cdot \frac{7}{10} + 7 \cdot \frac{7^2}{10^2} + 7 \cdot \frac{7^3}{10^3}$	10.7310
4	$7 \cdot \frac{7^4}{10^4} = 1.6807$	$7 \cdot \frac{7}{10} + 7 \cdot \frac{7^2}{10^2} + 7 \cdot \frac{7^3}{10^3} + 7 \cdot \frac{7^4}{10^4}$	12.4117
5	$7 \cdot \frac{7^5}{10^5} \approx 1.1765$	$7 \cdot \frac{7}{10} + 7 \cdot \frac{7^2}{10^2} + 7 \cdot \frac{7^3}{10^3} + 7 \cdot \frac{7^4}{10^4} + 7 \cdot \frac{7^5}{10^5}$	≈ 13.5882
6	$7 \cdot \frac{7^6}{10^6} \approx 0.8235$	$7 \cdot \frac{7}{10} + 7 \cdot \frac{7^2}{10^2} + 7 \cdot \frac{7^3}{10^3} + \cdots + 7 \cdot \frac{7^5}{10^5} + 7 \cdot \frac{7^6}{10^6}$	≈ 14.4117
7	$7 \cdot \frac{7^7}{10^7} \approx 0.5765$	$7 \cdot \frac{7}{10} + 7 \cdot \frac{7^2}{10^2} + 7 \cdot \frac{7^3}{10^3} + \cdots + 7 \cdot \frac{7^6}{10^6} + 7 \cdot \frac{7^7}{10^7}$	≈ 14.9882
8	$7 \cdot \frac{7^8}{10^8} \approx 0.4035$	$7 \cdot \frac{7}{10} + 7 \cdot \frac{7^2}{10^2} + 7 \cdot \frac{7^3}{10^3} + \cdots + 7 \cdot \frac{7^7}{10^7} + 7 \cdot \frac{7^8}{10^8}$	≈ 15.3917
9	$7 \cdot \frac{7^9}{10^9} \approx 0.2825$	$7 \cdot \frac{7}{10} + 7 \cdot \frac{7^2}{10^2} + 7 \cdot \frac{7^3}{10^3} + \cdots + 7 \cdot \frac{7^8}{10^8} + 7 \cdot \frac{7^9}{10^9}$	≈ 15.6742
10	$7 \cdot \frac{7^{10}}{10^{10}} \approx 0.1977$	$7 \cdot \frac{7}{10} + 7 \cdot \frac{7^2}{10^2} + 7 \cdot \frac{7^3}{10^3} + \cdots + 7 \cdot \frac{7^9}{10^9} + 7 \cdot \frac{7^{10}}{10^{10}}$	≈ 15.8720

Here's the graph of the sequence and the sequence of partial sums.



It appears that the series is convergent and $\sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{n!} \approx 15.87$.

[1] Stewart, *Calculus, Early Transcendentals*, p. 715, #12.