

Name: _____ ANSWER KEY _____

Score: _____

1. What is the difference between a sequence and a series?

A sequence is a list of numbers, and a series is the sum of a list of numbers.

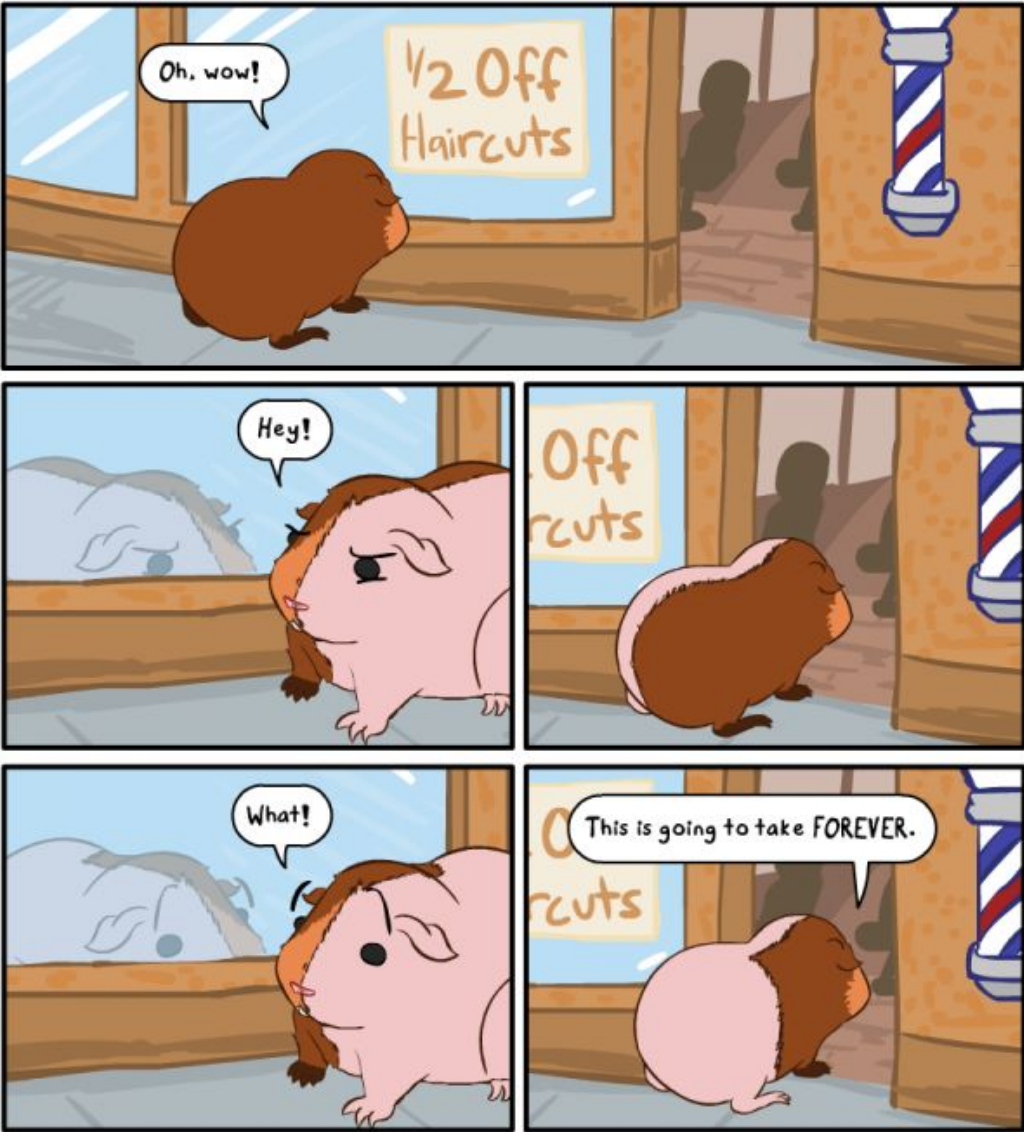
2. Does the following geometric series converge? If it does, find its value.

(a) $2 + \frac{2}{3} + \frac{2}{9} + \frac{2}{27} + \cdots$

We can recognize that this is a geometric series because we multiply by $\frac{1}{3}$ to get each new term. In other words, $r = \frac{1}{3}$. Since $|r| < 1$, the series converges. It converges to $\boxed{\frac{2}{1 - \frac{1}{3}} = 3}$

(b) $\sum_{n=1}^{\infty} \left(\frac{\pi}{e}\right)^n$

This geometric series has $r = \frac{\pi}{e}$. Since $\pi > e$, we know $|r| = \frac{\pi}{e} > 1$. Thus this geometric series $\boxed{\text{diverges.}}$



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