Exercise 1. Answer the following prompts, little to no explanation needed:

i) Consider the a geometric sequence (a_n) with initial condition $c=\frac{1}{3}$ and common ratio $r=\frac{-1}{2}$.

- Write an expression for the **general term** of a_n.

- What is the **value** of a_2?

- Is this sequence **monotonic**?

- What is the **limit** of this sequence? [**Hint**: If $\lim_{n\to\infty}|a_n|=0$ then $\lim_{n\to\infty}a_n=0$.]

- What can you say about the behavior of the series $\sum_{n=0}^{\infty}a_n$? Is it **convergent or divergent**?

ii) Consider the sequence whose general term is $b_n=\frac{2n}{3n+1}$ for $n=0,1,2,...$

- Write the **values** of b_0, b_1, b_2 and b_3.

- Is this sequence monotonic? **Increasing or decreasing**?

- Is this sequence **bounded**? Above, below or neither?

- What is the **limit** of this sequence as $n\to\infty$?

- What can you say about the behavior of the series $\sum_{n=0}^{\infty}b_n$? Is it **convergent or divergent**?