

# MAT 137 (Calculus II) Prof. Swift

## Worksheet on Geometric and Telescoping Series

1. Find the sum of the following geometric series using the result shown in class.

$$9 - 3 + 1 - \frac{1}{3} + \frac{1}{9} - \dots =$$

2. Find the sum of the finite geometric series using the result shown in class.

$$1 + 2 + 4 + 8 + \dots + 1024 =$$

Problems 3 and 4 concern the telescoping series  $\sum_{n=0}^{\infty} e^n - e^{n+1}$ .

3. Compute the  $n$  partial sum,  $s_n = \sum_{i=0}^n e^i - e^{i+1}$ .

4. Does  $\sum_{n=0}^{\infty} e^n - e^{n+1}$  converge? Give the sum, or explain why the series does not converge.