

1. Determine if the sequence $\left\{ \cos \left(\frac{1}{n} \right) \right\}$ converges or diverges. If it converges, find its limit.

2. Determine if the series $\sum_{n=1}^{\infty} \frac{2^n}{3^{n-1}}$ is convergent or divergent. If it is convergent, find the value of the sum.