

1 Sequences

1. Determine whether or not the sequence below converges. If it does, find the limit.

$$\{a_n\} = \ln(n+1) - \ln n$$

2. Determine whether or not the sequence below converges. If it does, find the limit.

$$\{b_n\} = \sqrt[n]{n}$$

2 Series

1. Find the sum of the series shown below using a calculator and using the formula.

$$\sum_{n=1}^8 \frac{5^n}{(-7)^{n+1}}$$

2. Determine the convergence of the series shown below. If it converges, find the limit.

$$\sum \sin n$$

3. Determine the convergence of the series shown below. If it converges, find the limit.

$$\sum_{n=1}^{\infty} \frac{2^n + 5^n}{e^{2n}}$$

4. Find all values of x that makes the series shown below convergent.

$$\sum_{n=0}^{\infty} \frac{(x-2)^n}{3^n}$$

5. Determine whether or not the series converges. If it does, find the limit. (Use the partial sums and observe that this is a telescoping series)

$$\sum_{n=2}^{\infty} \frac{1}{n^3 - n}$$