

1. Find the limit of the following sequence

$$\left\{ \frac{n^{10} - 5n^8 - 1}{2n^{15} + 4n^{29} + 5} \right\}$$

2. For the following series, find the value of the series. That is, what does it add up to?

$$\sum_{k=2}^{\infty} \frac{5 \cdot \pi^k}{10^{k+1}}$$

3. For the following series, find the value of the series. That is, what does it add up to?

Make sure to give a formula for s_n and then take the limit as n goes to infinity.

$$\sum_{k=4}^{\infty} \frac{1}{(k+9)(k+8)}$$

For problems 4 - 7 answer this question: Does the series converge or diverge? If you use a test, then make sure to write out the conditions of the test and check that they are fulfilled.

4.

$$\sum_{k=1}^{\infty} \frac{e^k}{e^k + 10}$$

5.

$$\sum_{k=2}^{\infty} \frac{2}{k \ln(k)}$$

6.

$$\sum_{k=1}^{\infty} (-1)^k \frac{5}{k^2 + 1}$$

7.

$$\sum_{k=1}^{\infty} \frac{k \cdot 10^k}{k!}$$