Example 1 : N-th Term Test

Using the n-th term test, what can you say about convergence or divergence
of the following series?

$$\sum_{n=1}^{\infty} \frac{n^3 - 2n + 4}{n^2 + n - 1}$$

Example 2 : N-th Term Test

Using the n-th term test, what can you say about convergence or divergence
of the following series?

$$\sum_{n=1}^{\infty} \frac{1 - (-1)^n}{n}$$

Example 3 : Geometric Series

Determine if the series converges or diverges. If the series converges calculate
the sum.

$$\sum_{n=1}^{\infty} \frac{(-9)^n}{3^{2n}}$$

Example 4 : Geometric Series

Determine if the series converges or diverges. If the series converges calculate the sum.

$$\sum_{n=2}^{\infty}(-1)^{n+1}\frac{(4)^{2n}}{3^{5n-2}}$$

Example 5 : Integral Test

Use the integral test to show that the series converges.

$$\sum_{n=2}^{\infty} \frac{5n^4}{(n^5 + 17)^2}$$

Example 6 : Integral Test

Use the integral test to show that the series diverges.

$$\sum_{n=1}^{\infty} \frac{(\ln n)^2}{\sqrt{n}}$$

Example 7 : Estimating a Sum with the Integral Test

You want to calculate the sum

$$\sum_{n=1}^{\infty} \frac{1}{n^8} \ .$$

Use the integral test to determine how many terms you need to add in order to estimate the sum with a guaranteed accuracy of four decimal places.