

1. Determine whether the series converges or diverges. If it converges, find the sum.

(a)  $\sum_{n=1}^{\infty} \frac{3^n + 2^n}{6^{n+2}}$

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

(c)  $\sum_{n=1}^{\infty} \frac{n^2 + \sin(n)}{n^2 + 1}$

**Work:**

**Answers:** (a)

(b)

(c)

2. Determine whether the series converges or diverges. Verify that the test used is applicable.

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

(b)  $\sum_{n=3}^{\infty} \frac{2}{n \ln(n)}$

**Work:**

**Answers:** (a)

(b)

3. Determine whether the series is convergent or divergent. If it converges, is it absolutely convergent?

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

(b) 
$$\sum_{n=3}^{\infty} \frac{(-1)^n}{n \ln(n)}$$

**Work:**

**Answers:** (a)

(b)

4. Find the radius and interval of convergence of the power series.

(a) 
$$\sum_{n=0}^{\infty} \frac{(-1)^n (x-3)^n}{(n+1)!}$$

(b) 
$$\sum_{n=1}^{\infty} \frac{(-1)^n (x+2)^n}{2^n n^2}$$

**Work:**

**Answers:** (a)

(b)