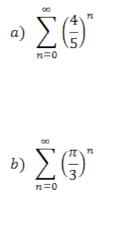
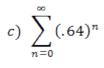
## **Infinite Series Practice**

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





$$d) \sum_{n=3}^{\infty} \left(\frac{1}{3}\right)^n$$

2. Express the following as a ratio of integers.

## a) 0.121212

b) 4.373737

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

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

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

4. Determine whether the series converges or diverges.



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

c) 
$$\sum_{n=1}^{\infty} \ln\left(\frac{2n+1}{n-3}\right)$$

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

5. Test the series for convergence or divergence.

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

$$b) \sum_{n=1}^{\infty} \frac{1}{3^n + 1}$$

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

6. Determine whether the series converges or diverges.

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

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

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

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

7. Determine whether the series converges or diverges.

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

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

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

8. Test the series for absolute convergence.

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

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

c) 
$$\sum_{n=0}^{\infty} (-1)^n \frac{n}{n^2 + 1}$$

9. Test the series for convergence or divergence.

a) 
$$\sum_{n=1}^{\infty} \frac{n^2}{2^n}$$

$$b) \sum_{n=0}^{\infty} \frac{2^n}{n!}$$

$$c) \sum_{n=0}^{\infty} \frac{(n+1)!}{n!}$$

 $d) \sum_{n=1}^{\infty} \frac{n^4}{3^n}$