

1. Use the ratio test to determine whether the following series converge or diverge.

(a)
$$\sum_{k=1}^{\infty} \frac{2^k}{k!}$$

(b)
$$\sum_{n=1}^{\infty} \frac{2^n}{n^{50}}$$

2. Determine whether the series converges or diverges. If the series converges, find a number N such that the partial sum S_N approximates the sum of the series within .001. If the series diverges, find a number N such that $S_N \geq 1000$.

(a)
$$\sum_{j=2}^{\infty} \frac{1}{j(\ln(j))^5}$$

(b)
$$\sum_{k=0}^{\infty} \frac{k}{k^6 + 17}$$

(c)
$$\sum_{n=0}^{\infty} \frac{2n}{\sqrt{n^2 + 5}}$$