

Determine whether each 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  $S_N \geq 1000$ .

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

2. 
$$\sum_{k=0}^{\infty} \frac{k}{k^6 + 17}$$