

1. Consider the series  $\sum_{k=2}^{\infty} \frac{3^k}{5^k + 2k}$

(a) Show that the series converges.

(b) Find a value  $N$  so that  $R_N \leq 10^{-10}$ .

(Hint: Compare  $R_N$  to a geometric series  $\sum_{k=N}^{\infty} r^k$ )

(c) Approximate the value of the series accurate within  $10^{-10}$  by using Maple to calculate  $S_N$ .

2. Do the following series converge or diverge?

$$(a) \sum_{k=2}^{\infty} \frac{2k}{7k + 18} \quad (b) \sum_{j=5}^{\infty} \frac{j!}{(j+2)!}$$