1. Consider the series $\displaystyle\sum_{k=1}^{\infty} \frac{2k^2}{3k^4+2}$
   a. Use the Integral Test to show that the series converges
   b. Use Maple to calculate S_{50}
   c. How accurately does S_{50} approximate the exact value of the series?

2. Do the following series converge or diverge?

(a) $\displaystyle\sum_{k=1}^{\infty} \frac{\sin(k)+3}{5k^{17}}$

(b) $\displaystyle\sum_{k=2}^{\infty} \frac{1}{k\ \ln(k)}$

(c) $\displaystyle\sum_{k=1}^{\infty} \frac{k+2}{k+17}$

(d) $\displaystyle\sum_{j=5}^{\infty} \frac{j!}{(j+2)!}$