1. Determine whether the following series converge or diverge. Make sure that you show your work. (Continued on the next page.)

(a) $\displaystyle\sum_{n=1}^{\infty} \sqrt[n]{5}$

(d) $\displaystyle\sum_{n=1}^{\infty} \frac{n+2}{n^3+8}$

(b) $\displaystyle\sum_{n=1}^{\infty} \frac{9n^2-4}{e^n\,(n^2-4)}$

(e) $\displaystyle\sum_{n=1}^{\infty} \frac{3+2\cos(n)}{n^2}$

(c) $\displaystyle\sum_{n=1}^{\infty} \frac{1}{n^2+5n+1}$

(f) $\displaystyle\sum_{n=2}^{\infty} \frac{1}{n\,(\ln(n))^4}$

(g) $\displaystyle\sum_{n=7}^{\infty} \left(\frac{1}{n-6} - \frac{1}{n} \right)$

(i) $\displaystyle\sum_{n=3}^{\infty} \frac{(\ln(n))^2}{n}$

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

(j) $\displaystyle\sum_{n=1}^{\infty} \frac{5n^2 - 10n + 12}{n^2}$

2. Find every real number k such that the following series converges.

$$\sum_{n=2}^{\infty} \frac{1}{n \left(\ln(n)\right)^k}$$

3. Do #50 in section 11.3.