

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

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

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

(b)
$$\sum_{n=3}^{\infty} \frac{9n^2-4}{e^n(n^2-4)}$$

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

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

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

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

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

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

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

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

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

3. Do #50 in section 11.3.