1. Do the following series converge or diverge? (If conv., absolutely or conditionally?)

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

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

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

(d) $\displaystyle\sum_{n=1}^{\infty} \frac{1}{\sqrt{n}\,\ln(n)}$

(e) $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{\sqrt{n}\,\ln(n)}$

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

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

(h) $\displaystyle\sum_{n=1}^{\infty} \frac{\cos(\pi n)}{n}$

(i) $\displaystyle\sum_{n=1}^{\infty} \frac{\sqrt{n^4+1}}{n^3+n}$

(j) $\displaystyle\sum_{n=1}^{\infty} \frac{n!}{e^{(n^2)}}$

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

(l) $\displaystyle\sum_{n=4}^{\infty} \frac{3}{n(n-3)}$ (what to?)

2. For which values of x is the series convergent or divergent?

(a) $\displaystyle\sum_{n=0}^{\infty} \frac{x^n}{2^n}$

(b) $\displaystyle\sum_{n=0}^{\infty} \frac{x^n}{n}$

(c) $\displaystyle\sum_{n=0}^{\infty} n x^n$

(d) $\displaystyle\sum_{n=0}^{\infty} n^n x^n$

3. For those in 2 (a—c), find a sumless formula!