Name_____

Series Practice

When applying a convergence/divergence test, always state which test you are using and demonstrate that the hypotheses of the test are satisfied.

1. Determine if the following series converge or diverge.

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

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

(c) $\sum_{n=3}^{\infty} \frac{3^{3n}}{n^3}$

(d) $\sum_{n=0}^{\infty} \frac{(-43)^{n+1}}{n!}$

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

(f) $\sum_{n=1}^{\infty} \frac{5n!}{n^{12}}$

(g) $\sum_{n=1}^{\infty} \frac{n!\,2^n}{(2n)!}$

(h) $\sum_{n=1}^{\infty} \frac{\ln(14n)}{\ln((2n+1)^2)}$

2. Determine if the following series converge absolutely, converge conditionally, or diverge.

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

(b) $\sum_{n=1}^{\infty} (-1)^{n-1} \frac{\ln(n)}{n}$

(c) $\sum_{n=1}^{\infty}(-1)^n \frac{n^2+5}{5n-3n^2}$