

Determine if the given series converges or diverges. Refer to page 505 for this worksheet

Name _____

Important Limits: $\lim_{n \rightarrow \infty} \sqrt[n]{n} = 1$

$$\lim_{n \rightarrow \infty} \frac{\ln n}{n} = 0$$

$$\lim_{n \rightarrow \infty} \frac{x^n}{n!} = 0$$

$$\lim_{n \rightarrow \infty} \left(1 + \frac{x}{n}\right)^n = e^x$$

$$\lim_{n \rightarrow \infty} x^{1/n} = 1 \quad x > 0$$

$$\lim_{n \rightarrow \infty} x^n = 0 \quad |x| < 1$$

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

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

3) $\sum_{n=1}^{\infty} \frac{10n + 1}{n(n+1)(n+2)}$

4) $\sum_{n=1}^{\infty} \frac{\sqrt{n}}{n^2 + 1}$

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

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

$$7) \sum_{n=1}^{\infty} \frac{n^3 (-2)^n}{3^n}$$

$$8) \sum_{n=1}^{\infty} \frac{2 + (-1)^n}{(1.25)^n}$$

$$9) \sum_{n=1}^{\infty} \frac{\ln n}{n^3}$$

$$10) \sum_{n=1}^{\infty} \frac{n \ln n}{2^n}$$

$$11) \sum_{n=1}^{\infty} e^{-n} n^3$$

$$12) \sum_{n=1}^{\infty} \frac{1}{(2n)!}$$

$$13) \sum_{n=1}^{\infty} \frac{(2n)!}{2^n}$$

$$14) \sum_{n=1}^{\infty} \frac{5^n}{n!}$$

$$15) \sum_{n=1}^{\infty} \left(\frac{n}{3n+1} \right)^n$$