

Directions: For each series, determine if the sum converges or diverges. (Note: this worksheet covers integral test, p -series, and comparison tests. You can use any tests you know, but the worksheet is designed to help you with integral test, p -series, and comparison tests.)

1.

$$\sum_{n=1}^{\infty} \frac{-2}{n\sqrt{n}}$$

2.

$$\sum_{n=1}^{\infty} \frac{5^n}{4^n + 3}$$

3.

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

4.

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

5.

$$\sum_{n=1}^{\infty} \frac{\sqrt[n]{n}}{n^2}$$

6.

$$\sum_{n=1}^{\infty} \frac{1-n}{n2^n}$$

7.

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

8.

$$\sum_{n=1}^{\infty} \frac{1}{3^n + n^3}$$

9.

$$\sum_{n=1}^{\infty} \frac{\sin^2 n}{2^n}$$

10.

$$\sum_{n=1}^{\infty} \frac{n + 2^n}{n2^n}$$

11.

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

12.

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