

10.5 – Harmonic Series and p -Series

Name _____

For the following p -series, determine whether they are convergent or divergent.

1.) $\sum_{n=1}^{\infty} \frac{1}{\sqrt[4]{n}}$	2.) $\sum_{n=1}^{\infty} \frac{1}{n^{\frac{5}{4}}}$
3.) $\sum_{n=1}^{\infty} \frac{1}{n^{\pi}}$	4.) $\sqrt{3} + \frac{\sqrt{3}}{\sqrt{2}} + \frac{\sqrt{3}}{\sqrt{3}} + \frac{\sqrt{3}}{\sqrt{4}} + \dots$
5.) $1 + \frac{1}{2^{\frac{3}{2}}} + \frac{1}{3^{\frac{3}{3}}} + \frac{1}{4^{\frac{3}{4}}} + \dots$	6.) $1 + \frac{1}{\sqrt[5]{4}} + \frac{1}{\sqrt[5]{9}} + \frac{1}{\sqrt[5]{16}} + \dots$

Review Determine the convergence or divergence of the series and specify what test you are using.

7.) $\sum_{n=1}^{\infty} \frac{1}{3n-2}$	8.) $\sum_{n=1}^{\infty} \frac{2n}{1+n^4}$
9.) $4\sum_{n=1}^{\infty} \frac{1}{n^{0.97}}$	10.) $\sum_{n=0}^{\infty} \left(\frac{7}{8}\right)^n$
11.) $\sum_{n=1}^{\infty} \left(\frac{1}{n^2} - \frac{1}{n^3}\right)$	12.) $\sum_{n=1}^{\infty} \frac{n}{e^n}$
13.) $\sum_{n=0}^{\infty} \frac{\tan^{-1} n}{n^2+1}$	14.) $\sum_{n=2}^{\infty} \frac{n}{\sqrt{n^2-1}}$