



10.1 – Defining Convergent and Divergent Infinite Series

Name \_\_\_\_\_

In the following sequences, determine the convergence or divergence with the given  $n$ th term. Be sure to properly justify your conclusion.

<p>1.) <math>\{a_n\} = \left\{(-1)^n \left(\frac{n}{n+1}\right)\right\}</math></p>	<p>2.) <math>\{a_n\} = \left\{\frac{-2\sqrt{n}}{3\sqrt{n+1}}\right\}</math></p>
<p>3.) <math>\{a_n\} = \left\{\frac{3n^2-3n+8}{4n^2+1}\right\}</math></p>	<p>4.) <math>\{a_n\} = \{n \pm (-1)^n\}</math></p>

Find the sequence of partial sums,  $S_1, S_2, S_3, S_4$ .

<p> 5.) <math>1 + \frac{1}{4} + \frac{1}{9} + \frac{1}{16} + \frac{1}{25} + \dots</math></p>	<p> 6.) <math>\sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n!}</math></p>
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## 10.2 & 10.3 – Geometric Series Test and nth term Test

In the following exercises, determine the convergence or divergence of the series. Be sure to properly justify your conclusion.

$$7.) \sum_{n=1}^{\infty} \frac{n+5}{5n+2}$$

$$8.) \sum_{n=1}^{\infty} \frac{n+3}{2n-1}$$

$$9.) \sum_{n=1}^{\infty} (\sin 1)^n$$

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

$$11.) \sum_{n=0}^{\infty} \frac{9}{3^n}$$

$$12.) \sum_{n=2}^{\infty} \frac{n}{10 \ln n}$$