**Using the Document**

Sequences&Series.tns: This calculator file provides a technology tool for investigating the limit of an arbitrary sequence  and whether an infinite series of the form  is convergent or divergent. A slider is used to display values of  and the partial sums  for various values of . A table of these values is automatically computed and displayed in a Lists and Spreadsheet page.

The default sequence is  and the corresponding series is .

The values for  used in this file are .

**Suggested Applications and Extensions**

Find several values of each sequence. Use these values to conjecture if the sequence converges or diverges. If you think it converges, guess the limit.

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 
11. 
12. 

Find several partial sums for each series. Use these values to guess whether the series is convergent or divergent.

1. 
2. 
3. 
4. 
5. 
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9. 
10. 

**Extended Application Questions**

1. Determine whether there is a relationship between series convergence and the terms of the corresponding sequence. Are there any general sequences  such that the corresponding series  is guaranteed to converge? Diverge?
2. In those series that contain some terms that are positive and some terms that are negative, consider the series of the absolute value of each term, that is, . Is there a relationship between the convergence or divergence of  and the convergence or divergence of ?