Partial Product 2

Tucker MacIntyre

1. For the first infinite series I will use the examples:
   $a_n = $ lambda n: $1 + \frac{1+n^2}{1+n^5}$

   The last 15 terms of the sequence are:
   2.49868379 2.49868379 2.49868379 2.49868379 2.49868379 2.49868379 2.49868379 2.49868379 2.49868379
   2.49868379 2.49868379 2.49868379 2.49868379 2.49868379 2.49868379

   $a_n = $ lambda n: $1 + \frac{1+n^5}{1+n^2}$
   The last 15 terms of the sequence are:
   inf inf inf inf inf inf inf inf inf inf inf inf inf inf inf

   - For these series, i believe that as long as the value for n is significantly larger in the numerator, the series will ultimately diverge. That being said, if the value of n is significantly larger in the denominator, then the series will converge.

2. For the second infinite series I will use the examples:

   $a_n = $ lambda n: $1 + \left(\frac{1}{2}\right)^n$
   The last 15 terms of the sequence are: [2.38423103 2.38423103 2.38423103 2.38423103 2.38423103
   2.38423103 2.38423103 2.38423103 2.38423103 2.38423103 2.38423103 2.38423103 2.38423103 2.38423103
   2.38423103]

   $a_n = $ lambda n: $1 + 2^n$
   The last 15 terms of the sequence are: [inf inf inf inf inf inf inf inf inf inf inf inf inf inf inf]

   - For these series, I believe that as long as the value for b is greater than zero but less then one, the series will converge. If the value of b is greater than one then the series will diverge.