

Partial Product 2

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1 Partial Product 1

For the first Partial Product, when only using rational functions for the $f(n)$ and $g(n)$, I found that most of the time it will diverge. An example of when this would diverge would be:

$$1 + \frac{n^2}{n^3}.$$

When plugged into the code the last 15 terms all seem to still diverge. An example of when the first partial product would converge would be:

$$1 + \frac{n}{n^4}$$

When plugged into the code the last 15 terms seem to be converging to 2.428. The pattern that I can see with this, is when the bottom has a higher degree than the top it tends to converge. But the degrees have to be off by atleast 2.

2 Partial Product 2

For the second partial product, I found that there was a very interesting pattern. When the B is less than 1 the function seems to converge. For example when the B happens .5 the last 15 terms are converging to 2.384. On the contrast, if B happens to be 1 or greater than 1 the function seems to diverge. For example if you take B to be 1.5 the last 15 terms are all infinity, meaning it is diverging.