Partial Product Assignment

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1 Partial Sum Terms

Third Term (Eq3)

$$\prod_{i=1} \frac{4}{i^2}$$

The first 15 partial product terms I created are [0.00000000e+00 4.00000000e+00 4.00000000e+00 1.77777778e+00 4.44444444e-01 7.11111111e-02 7.90123457e-03 6.44998740e-04 4.03124213e-05 1.99073685e-06 7.96294741e-08 2.63237931e-09 7.31216475e-11 1.73068988e-12 3.53202017e-14] The last 15 terms of the last sequence are [1.88579060e-206 1.01989757e-209 5.38986692e-213 2.78402217e-216 1.40589429e-219 6.94268785e-223 3.35355047e-226 1.58485372e-229 7.32965068e-233 3.31808541e-236 1.47061957e-239 6.38289745e-243 2.71352852e-246 1.13016598e-249 4.61245171e-253]

2 Divergence and Convergence

Based on the output from the first partial sums equation, I think this series will eventually converge. The series is slowly decreasing and think it will diverge around 0.6666667. The second partial product converges to zero. Even when looking at only 100 terms the last 15 terms in the series is already at

zero, so it converges fairly quickly. The third series also converges. I can tell because the exponent number is getting negatively larger. I think this series will also converge to zero. I do not think I chose a large enough number again in this code.