

Computing Pi as Slowly as Possible

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$$\begin{aligned} \frac{\binom{2n}{n}}{4^n} &= \frac{1}{\sqrt{n}} \frac{1}{\sqrt{\pi}}. \\ & \left(1 - \frac{1}{8}n^{-1} + \frac{1}{128}n^{-2} + \frac{5}{1024}n^{-3} - \frac{21}{32768}n^{-4} - \frac{399}{262144}n^{-5} \right. \\ & + \frac{869}{4194304}n^{-6} + \frac{39325}{33554432}n^{-7} - \frac{334477}{2147483648}n^{-8} - \frac{28717403}{17179869184}n^{-9} + \frac{59697183}{274877906944}n^{-10} \\ & + \frac{8400372435}{2199023255552}n^{-11} - \frac{34429291905}{70368744177664}n^{-12} - \frac{7199255611995}{562949953421312}n^{-13} \\ & + \frac{14631594576045}{9007199254740992}n^{-14} + \frac{4251206967062925}{72057594037927936}n^{-15} - \frac{68787420596367165}{9223372036854775808}n^{-16} \\ & - \frac{26475975382085110035}{73786976294838206464}n^{-17} + \frac{53392138323683746235}{1180591620717411303424}n^{-18} \\ & \left. + \frac{26275374869163335461975}{9444732965739290427392}n^{-19} - \frac{105772979046693606062363}{302231454903657293676544}n^{-20} + O(n^{-21}) \right) \end{aligned}$$

References

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