

A nested radical approximation for π

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Back in 2002 the author found an approximation for π , that has an absolute error of about $4 \cdot 10^{-5}$. It may not be of particular practical use, but it is (in the opinion of the author) an exotic and visually appealing expression to approximate that number. For that reason it is published here:

$$\pi \approx \sqrt{7 + \sqrt{6 + \sqrt{5}}}.$$

The above expression can also be found as the greatest positive root of the polynomial $x^8 - 28x^6 + 282x^4 - 1204x^2 + 1844 = 0$. Note that all roots of this polynomial have the form $\pm\sqrt{7 \pm \sqrt{6 \pm \sqrt{5}}}$.

With the help of a computer more approximations in the form of nested radicals can easily be found. Some of them as well as a few more general results may be part of a future paper.