FORMULAS FOR π

$$\pi = \text{area of circle of radius } 1$$

$$\pi = \frac{1}{2}(\text{ length of circumference of circle of radius } 1)$$

$$\frac{\pi}{2} = \frac{2}{1}\,\frac{2}{3}\,\frac{4}{3}\,\frac{4}{5}\,\frac{6}{5}\,\frac{6}{7}\,\frac{8}{7}\,\frac{8}{9}\,\cdots\cdots \qquad \textbf{[1655]}$$

$$\pi = \frac{3\sqrt{3}}{4} + 24\int_0^{1/4}\sqrt{x-x^2}\,dx \qquad \textbf{[1666]}$$

$$\frac{\pi}{4} = 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \cdots\cdots \qquad \textbf{[1673]}$$

$$\pi = 2\sqrt{3}\sum_{n=0}^{\infty}\frac{(-1)^n}{(2n+1)3^n} \qquad \textbf{[1717]}$$

$$\pi = \sqrt{6\sum_{n=1}^{\infty}\frac{1}{n^2}} \qquad \textbf{[1750]}$$

$$\frac{1}{\pi} = \frac{2\sqrt{2}}{9801}\sum_{n=0}^{\infty}\frac{(4n)!(1103+26390n)}{(n!)^4 396^n}. \qquad \textbf{[1910]}$$

$$\pi = \frac{22}{7} - \int_0^1 \frac{x^4(1-x)^4}{1+x^2}\,dx \qquad \textbf{[1944]}$$

$$\frac{1}{\pi} = 12\sum_{n=0}^{\infty}(-1)^n\,\frac{(6n)!}{(n!)^3(3n)!}\,\frac{13591409+545140134n}{640320^{3n+\frac{3}{2}}} \qquad \textbf{[1987]}$$

$$\pi = \sum_{n=0}^{\infty}\frac{1}{16^n}\left(\frac{4}{8n+1} - \frac{2}{8n+4} - \frac{1}{8n+5} - \frac{1}{8n+6}\right) \qquad \textbf{[1997]}$$

$$\pi = \frac{355}{113} - \frac{1}{3164}\int_0^1 \frac{x^8(1-x)^8(25+816x^2)}{1+x^2}\,dx \qquad \textbf{[2005]}$$

$$\pi = \frac{\sqrt{3}}{8}\sum_{n=0}^{\infty}\frac{1}{64^n}\left(\frac{8}{6n+1} + \frac{12}{6n+2} + \frac{2}{6n+3} - \frac{1}{6n+5}\right) \qquad \textbf{[2006]}$$

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