Bailey, Borwein, and Plouffe in the article "On the Rapid Computation of Various Polylogarithmic Constants" give the following formula for π, which allows the computation of an individual binary digit in the binary expansion of π with small storage

$$\pi = \sum_{i=0}^{\infty} \frac{1}{16^i} \left(\frac{4}{8\,i+1} - \frac{2}{8\,i+4} - \frac{1}{8\,i+5} - \frac{1}{8\,i+6} \right)$$

Erich Kaltofen and C. Ryan Vinroot, following their integer relation approach (re)-discovered the following alternate formula:

$$2\pi = \sum_{i=0}^{\infty} \frac{1}{16^i} \left(\frac{8}{8\,i+2} + \frac{4}{8\,i+3} + \frac{4}{8\,i+4} - \frac{1}{8\,i+7} \right)$$

A Maple V.4 session showing our derivation is here. This session can be loaded as Maple text and executed.

Adamchik and Wagon [Am. Math. Monthly, Nov. 1997; url] give the following pretty variant:

$$\pi = \sum_{j=0}^{\infty} \frac{(-1)^j}{4^j} \left(\frac{2}{4\,j+1} + \frac{2}{4\,j+2} + \frac{1}{4\,j+3} \right)$$

Their solution is dependent on the two given above as follows:

$$4\pi = \sum_{k=0}^{\infty} \frac{1}{4^{2k}} \left(\frac{8}{8\,k+1} + \frac{8}{8\,k+2} + \frac{4}{8\,k+3} \right) - \sum_{k=0}^{\infty} \frac{4}{4^{2k+1}} \left(\frac{2}{8\,k+5} + \frac{2}{8\,k+6} + \frac{1}{8\,k+7} \right)$$

which is 2 times BBP plus 1 times our variant.

Fabrice Bellard has given a formula for base 2^{10}, which allows a faster algorithm for computing the hexadecimal digits of π.