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Machin-type formulas expressing π in terms of ϕ ,
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Abstract

In this paper, we prove some formulas for π that are expressed in terms of the powers of the reciprocal of the Golden Ratio ϕ . These formulas depend on Machin-type identities like the following:

$$\pi = 12 \arctan \left(\frac{1}{\phi^3} \right) + 4 \arctan \left(\frac{1}{\phi^5} \right).$$