

An Approximation of pi by the Law of Cosines

By [At Right Angles](#) | Nov 30, 2017

The approximation of π is a popular pastime of students of mathematics and I have started with the familiar age-old way, of fitting a regular polygon tightly in a circle of radius r . The vertices of the n -sided polygon are joined to the centre of the circle so that the angle subtended at the centre by each segment is $360^\circ/n$. If n is sufficiently large, the perimeter of the polygon approaches the circumference $2\pi r$ of the circle and this approximation improves as the number of segments increases. My object is to find a formula for π that is independent of the radius r .

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