

Squaring the Circle

Among the many mathematical problems put forward by the ancient Greeks was the problem of squaring the circle - that is, constructing a square with the same area as a given circle, using only a straight edge and compass.

For a circle of radius r and area πr^2 this means constructing a square of side x such that $x^2 = \pi r^2 \rightarrow x = r\sqrt{\pi}$.

This was later shown to be impossible as a consequence of the fact that π is not the solution of any polynomial equation with rational coefficients (coefficients that can be written as fractions), hence the circle cannot be squared.