

כמה מרובע יתר על העיגול רביע –

How much is a square larger than a circle; a fourth

Overview

If a circle is inscribed within a square, the area of the square will be a fourth larger than the area of the circle.¹

הכי איתא בברייתא דמסכת מדות וכן בעירובין²:

This ratio is cited in a ברייתא in מסכת מדות and so too in עירובין.

Summary

This ratio is cited elsewhere in the גמרא.

Thinking it over

There is a משנה in מ"ו פ"ב אהלות פי"ב which states that שהמרובע יותר על העגול רביע. Why did not תוספות cite this משנה, rather than citing a ברייתא and a גמרא?!

¹ This would mean if the area of a square (4x4) is sixteen, the area of a circle (with a diameter of 4) will be twelve; a fourth less than the square. This holds true if we assume (as the גמרא does) the value for pi to be 3. $[A = \pi r^2]$ Pi is the ratio of the circumference of a circle to its diameter. According to $\pi = 3$ if the diameter of a circle is one, the circumference is three.

² יד, ב וש"נ. See 'Thinking it over'.