L17 - 08/10/2024

Ancient Greek Mathematics

<u>Reference</u> – Stillwell : Mathematics & its History

Rational pts on a Circle

This is related to enumerating Pythagorean triples.

$$a^2 + b^2 = c^2 \quad , \qquad a, b, c \in \mathbb{Z}_{\geq 0}$$
$$GCD(a, b, c) = 1$$

General sol^n –
$$a = p^2 - q^2$$
$$b = 2pq$$
$$c = p^2 + q^2$$

But, there's a geometric approach to the same problem.

for non-trivial $sol^n s$, $c \neq 0$.

$$\Rightarrow \left(\frac{a}{c}\right)^2 + \left(\frac{b}{c}\right)^2 = 1$$

Hence, consider the eq^n : $x^2 + y^2 = 1$

$$S = \{(x, y) : x^2 + y^2 = 1\}$$

unit circle