



CHEENTA ACADEMY

Junior Data Science Olympiad

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Cheenta Academy

Algebra

Problem 1

What is the product of all the roots of the equation

$$\sqrt{5|x| + 8} = \sqrt{x^2 - 16}$$

Trigonometry

Problem 1

If

$$\sum_{n=0}^{\infty} \cos^{2n} \theta = 5$$

what is the value of $\cos 2\theta$?

Coordinate Geometry

Problem 1

A unit square is rotated 45° about its center. What is the area of the region swept out by the interior of the square?

Combinatorics

Problem 1

Call a set of integers cheentacy if it contains no more than one out of any three consecutive integers. How many subsets of $\{1, 2, 3, \dots, 12\}$, including the empty set, are cheentacy?

Data Visualization

Problem 1

What is the correlation coefficient of the following data set?

$(-100, 200), (-99, 198), \dots, (-1, 2), (1, -2), \dots, (100, -200), (101, -200)$