Ellipse Art

locked

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One approach to this problem would be to sample points within the canvas, either using a Monte Carlo method or defining evenly spaced grid of points inside the canvas. For each point (that is either randomly chosen or in the grid), you would test to see if it was within an ellipse. If the sum of the distance between the point and each foci is less than the radius, it is within the ellipse. Dividing the number of points that are not in any ellipse by the total number of points tested gives you an estimate of the proportion of the canvas that is unpainted. Increasing the number of points tested improves the accuracy of this estimate, and it is not difficult to meet the accuracy requirements of this problem.

Statistics

Difficulty: Hard
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