Problem of the Week

Problem D

Throw to Win

Kurtis is creating a game for a math fair. They attach n circles, each with radius 1 metre, onto a square wall with side length n metres, where n is a positive integer, so that none of the circles overlap. Participants will throw a dart at the wall and if the dart lands on a circle, they win a prize. Kurtis wants the probability of winning the game to be at least $\frac{1}{2}$.

If they assume that each dart hits the wall at a single random point, then what is the largest possible value of n?