Hostile brothers in a circle

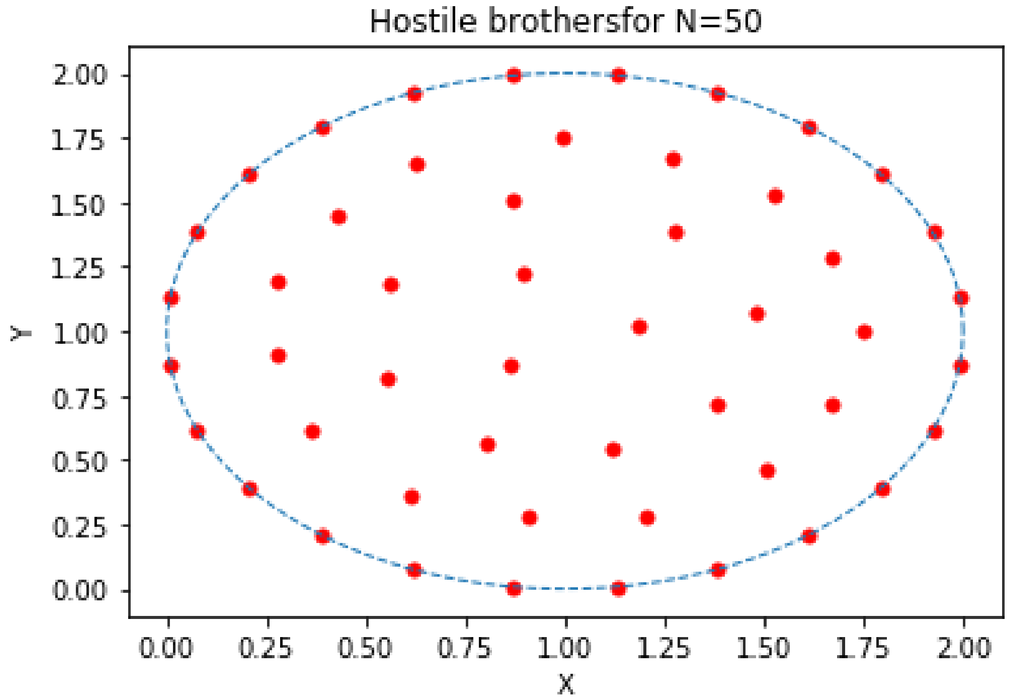
Solve the following optimization problem

Find the locations of N brothers in a circle in a way that the minimum distance between each pair of brothers is maximum

$$\max_{x_i, y_i} \quad r$$

$$\left(x_i - x_j\right)^2 + \left(y_i - y_j\right)^2 \geq r^2$$

$$(x_i - R)^2 + (y_i - R)^2 \leq R^2$$



Ex20