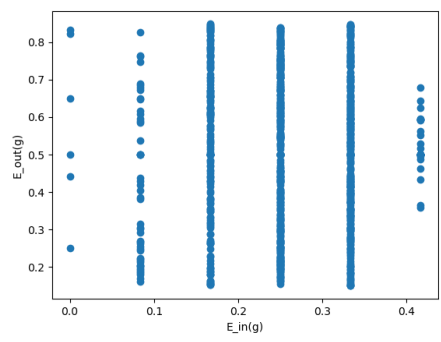# Problem 5

The answer from ChatGPT does not answer the question we asked. The answer told us to generate an N-2 degree polynomial, then predict the answer of the N-th number. But we want to know the next integer from the first N-1 terms of an integer sequence generated from the polynomial of degree N.

# Problem 11



Figure 1: scatter plot



Figure 2: median



Figure 3: snapshot

# Problem 12

For the P11, we choose $\theta, s$ to minimize $E_{in}$. And now, we choose $\theta, s$ uniformly. From the median, we can easily observe that the $E_{out} - E_{in}$ is almost 0. The conclusion is that if we choose $\theta, s$ to minimize $E_{in}$, we will have more $E_{out} - E_{in}$, while if we choose $\theta, s$ uniformly, we can minimize $E_{out} - E_{in}$ but we will have more $E_{in}$.
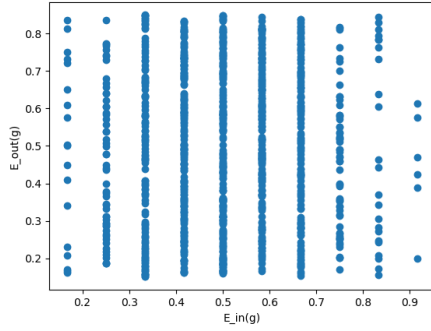


Figure 4: scatter plot

The median of E_out - E_in is  -0.014203931743953596

Figure 5: median