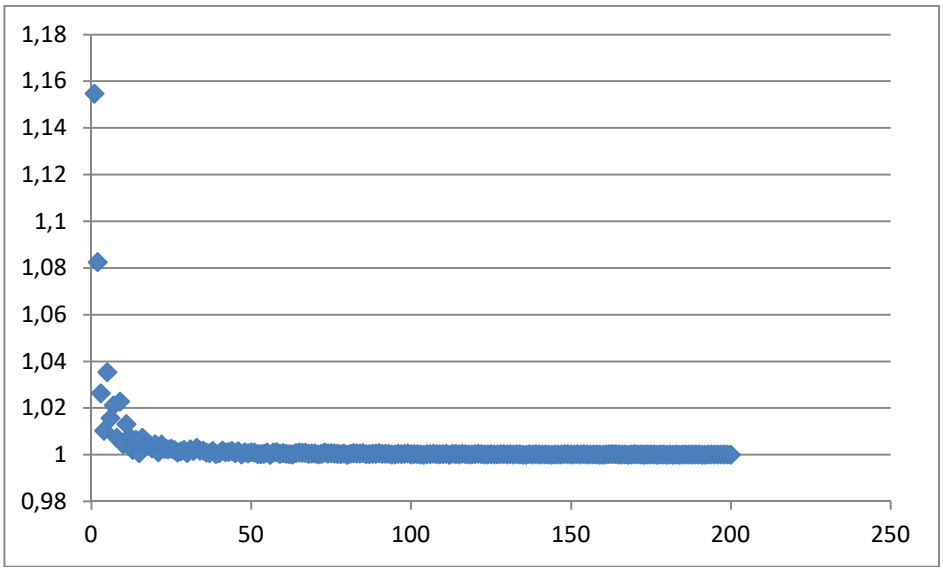
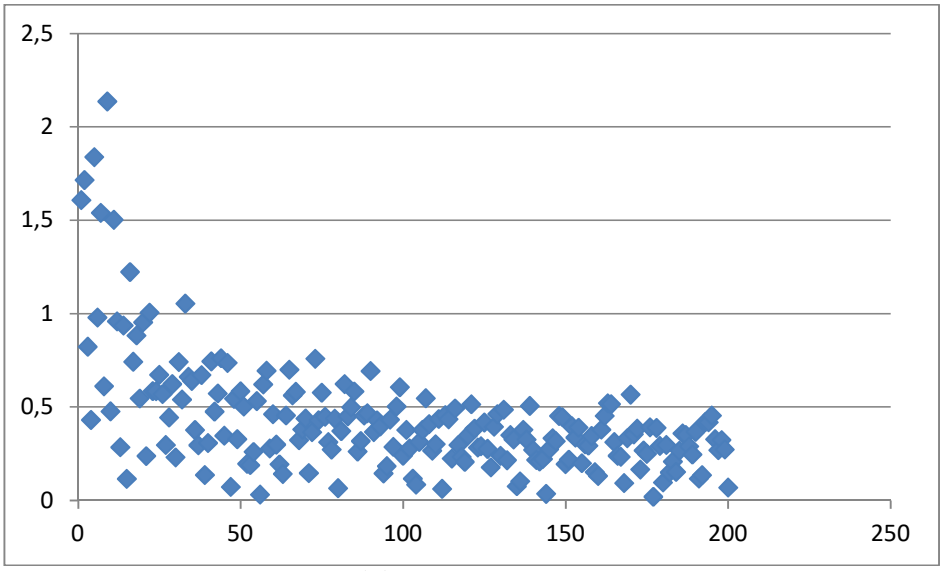
Doubled largest area a(n) of triangles enclosed by a circle with radius n such that the center and vertex coordinates are integers.

Ignoring the integer restriction, the triangle with the largest area is equilateral. Its doubled area is $b(n) = 6 \cdot n^2 \cdot \sqrt{3}$.



The first diagram shows $n \to \frac{a(n)}{b(n)}$ tending to 1 or $a(n) \sim b(n)$.
The greater n the less important the grid structure.



The second diagram shows $n \to \frac{b(n)-a(n)}{n}$. It looks like a random distribution tending to a variation between 0 and 0.5.