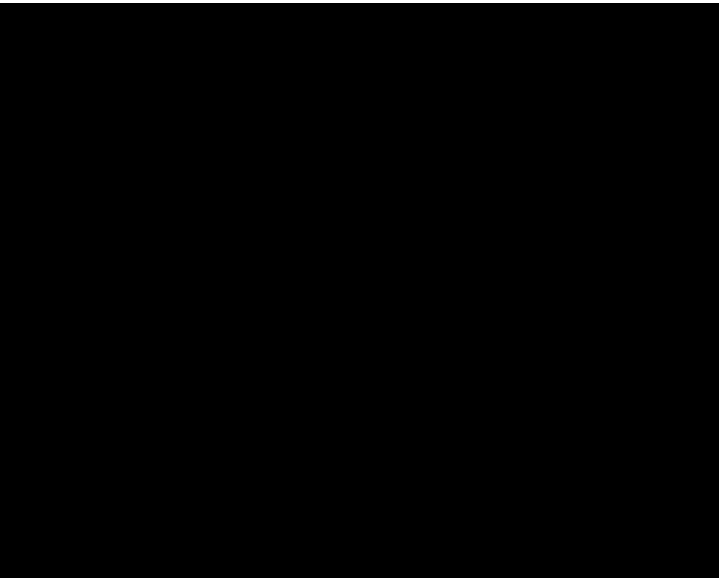


# Home

## Mandelbrot Set Definition

The Mandelbrot set algorithm iterates over a grid of complex numbers, applying the equation  $z(n+1) = z(n)^2 + c$  to each point, checking if it escapes to infinity or remains bounded.

The iteration count before escape is used to color the pixel, creating a visual representation of the set.



## Goal

The project aims to implement and time the algorithm using 4 different methods:

- 1. [Serial](#)
- 2. [OpenMP](#)
- 3. [Pthreads](#)
- 4. [MPI](#)

Hardware used for timing:

- Intel i5-12500H (12 cores / 16 threads) for 1, 2
- AMD 5700x3D (8 cores / 16 threads) for 3, 4

To have a better overview of how the timings compare / scale, a comparison between the **Serial** values is included:

Iterations	5700x3D Compute Time (ms)	5700x3D Save Time (ms)	12500H Compute Time (ms)	12500H Save Time (ms)
10	32.30	24.90	22.10	24.30
25	53.70	21.20	52.70	21.20
50	79.20	21.40	86.30	18.20
100	128.30	21.40	130.10	17.10
250	268.60	21.80	236.40	16.20
500	496.60	22.00	398.70	15.60
1000	953.50	21.90	699.80	24.20
2500	2321.90	22.30	1560.40	18.60
5000	4583.10	22.90	3102.10	18.10

Compute and Save Time Comparison for 5700x3D and 12500H

