

GCD

$$1 + \log n(\log n + 1 + 1 + 1) + 1$$

$$\log n^2 + 3\log n + 2$$

$$2\log n + 3\log n + 2$$

$$5\log n + 2$$

$$= O(\log n)$$

Logarithmic

HANAI

$$1 + n(n(1 + 1)) + 1$$

$$1 + 2n^2 + 1$$

$$2n^2 + 2$$

$$= O(n^2)$$

Quadratic