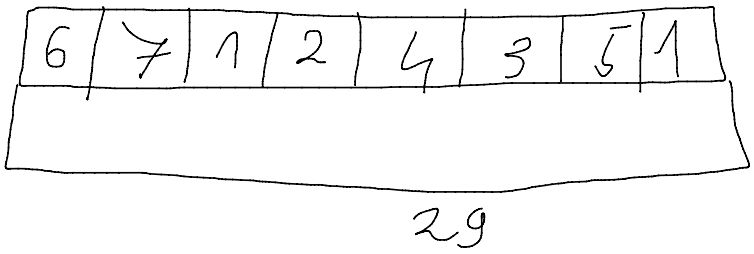
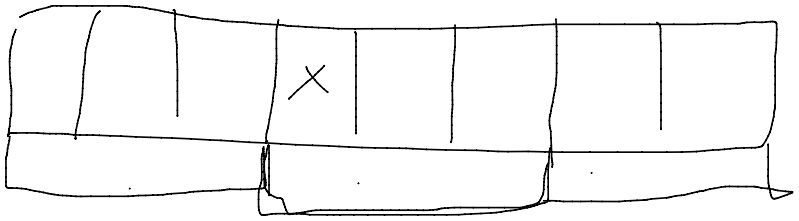
Sqrt Decomposition

Friday, 5 March 2021 16:30

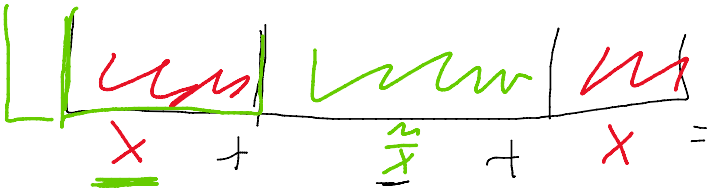
V: (x, v)

Q(a, b)

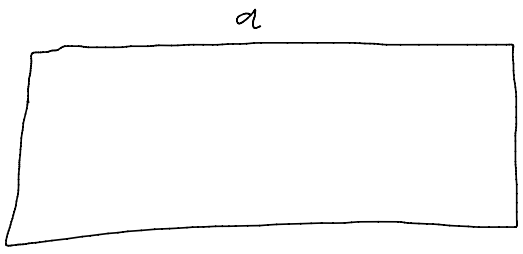




$n = x \cdot \frac{n}{x}$



$O(x + \frac{n}{x}) = O(\sqrt{n} + \frac{n}{\sqrt{n}}) = O(\sqrt{n})$



$a \cdot b = n \Rightarrow b = \frac{n}{a}$

$2(a+b) = \min$

$f(a) = 2(a + \frac{n}{a})$

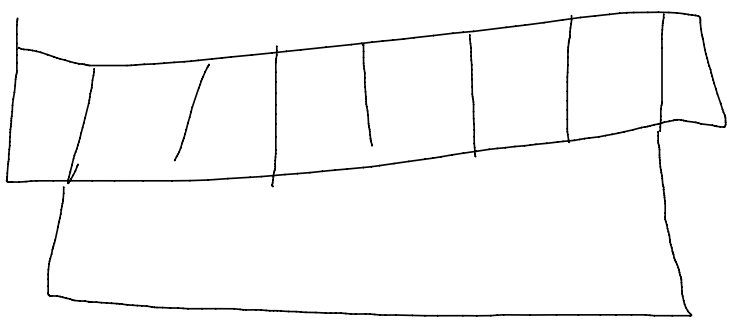
$= a + \frac{n}{a}$

$f'(a) = 1 - \frac{n}{a^2} = 0$

$\frac{n}{a^2} = 1$

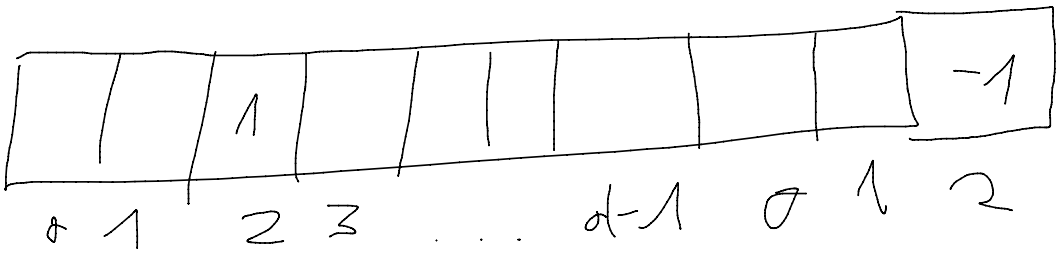
$n = a^2$

$a = \sqrt{n}$



$d > \sqrt{n}$ a, b, d

$d < \sqrt{n}$ a $a+d$ ----



0 1 2 3 4 5 6 7 8 9

$s[i] = s[i] + s[i-d]$