

$a, a+1, a+2, \dots$

$f(x) \geq 0$

LINEAR TIME
prop to n

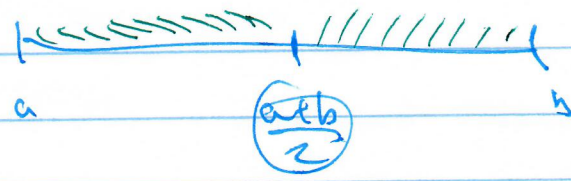
$T(n) = 1 + T(n-1)$

make

OPI

BINARY SEARCH

prop $\log n$

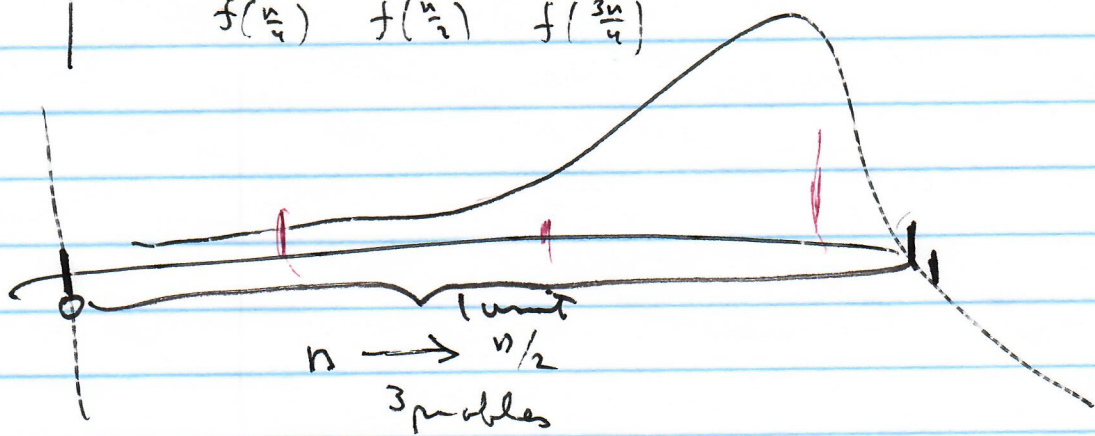
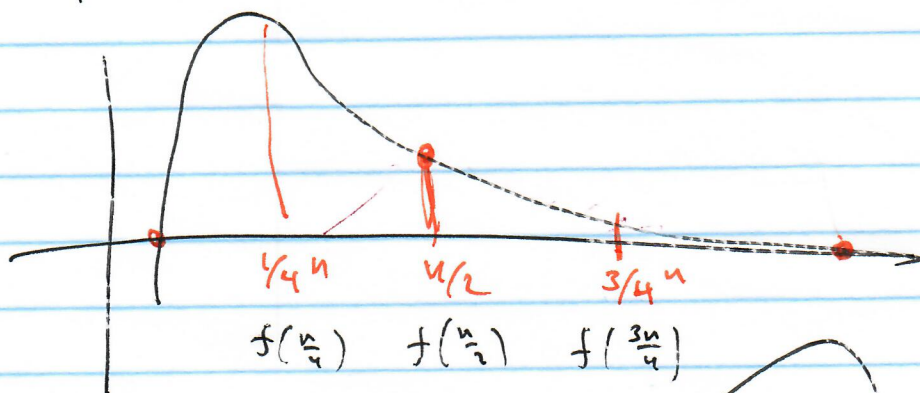
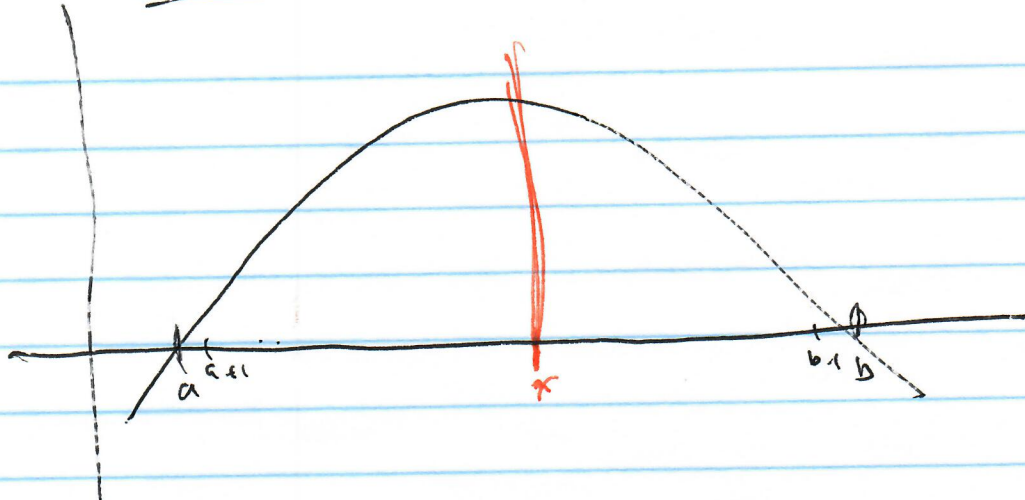


$T(n) = 1 + T(\frac{n}{2})$

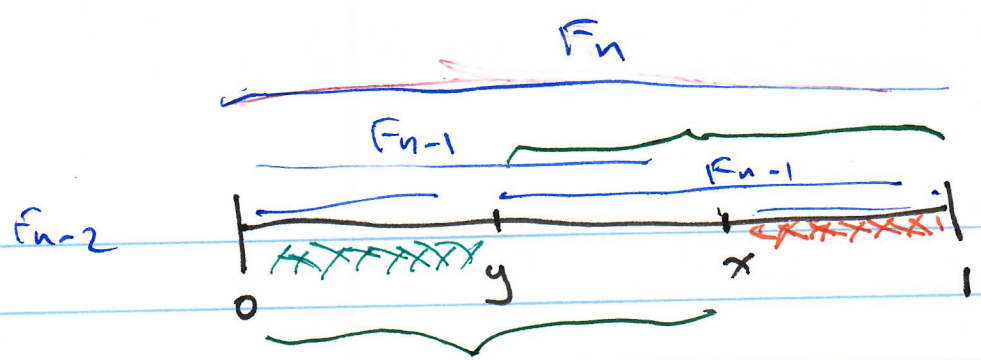
$\dots < >$

$n \rightarrow \lfloor n/2 \rfloor \rightarrow \lfloor n/4 \rfloor \rightarrow \lfloor n/8 \rfloor \dots \rightarrow 1$
 $\log_2 n$

UNIMODAL $f(n)$



$$s(n) = 3 + s(n/2)$$



$$F_n = F_{n-1} + F_{n-2}$$

$$f(y) < f(x)$$

$$f(x) < f(y)$$

$$\begin{cases} \frac{y}{x} = \frac{x}{1} \\ \frac{1-x}{1-y} = \frac{x}{1} \end{cases}$$

$x^2 + x - 1 = 0$

$$x = \frac{1 \pm \sqrt{5}}{2} = 0.61801$$

$$A(n) = 1 + A(n/\phi) \quad \phi = \frac{1+\sqrt{5}}{2}$$