

INTERPOLATION

$$\begin{array}{l} h - x \\ n-h - \text{roots} \end{array}$$

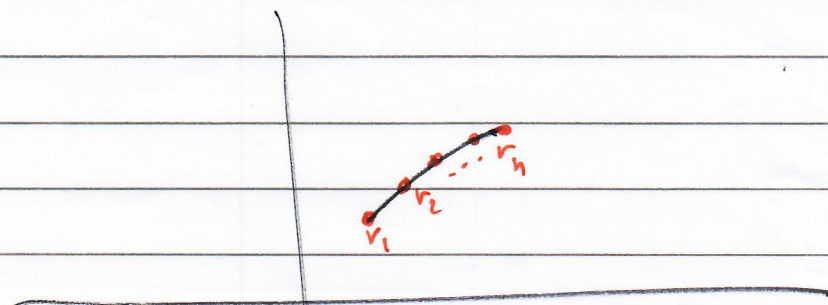
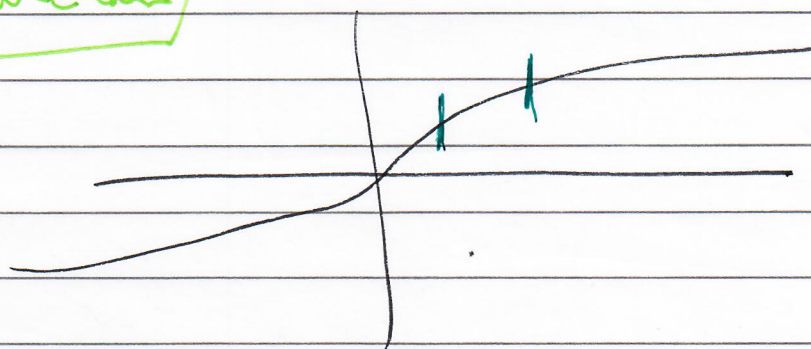
$$a_0 + a_1 x + a_2 x^2 + \dots + a_n x^n = (x-r_1)(x-r_2) \dots (x-r_n)$$

$$\{r_1, r_2, \dots, r_n\}$$

INTERPOLATION

$$\{a_0, a_1, a_2, \dots, a_{n-1}\}$$

POLY from roots



$$a_k =$$

$(-1)^{n-k} \left\{ \text{SUM OF ALL } \binom{n}{n-k} \text{ POSSIBLE PRODUCTS OF } n-k \text{ OF THE ROOTS} \right\}$

$$\binom{n}{n-k} - 1$$

ADDITIONS  
SUBTRACTIONS

$$\sum_{k=0}^n \binom{n}{n-k} (n-k-1)$$

MULTS — 1 product

MULTS  $\sum_{h=0}^n \binom{n}{n-h} (n-h-1) = \sum_{h=0}^n \binom{n}{n-h} (n-h) - \sum_{h=0}^n \binom{n}{n-h}$

$$= \boxed{\sum_{h=0}^n \binom{n}{h} h} - \boxed{\sum_{h=0}^n \binom{n}{h}}$$

committee  
of size  $h$   
w/chain

$n$  chain

$2^{n-1}$  set of committee

$$\Rightarrow n 2^{n-1}$$

$\therefore \text{mult } n 2^{n-1} - 2^n = (n-1) 2^{n-1}$

$n = 20+$