Fecall. (1) Monomial Symmetric Function

$$M_{\lambda}(x_1, x_2, x_3, ...) = x_1^{\lambda_1} x_2^{\lambda_2} ... x_{\ell}^{\lambda_{\ell}} + ...$$

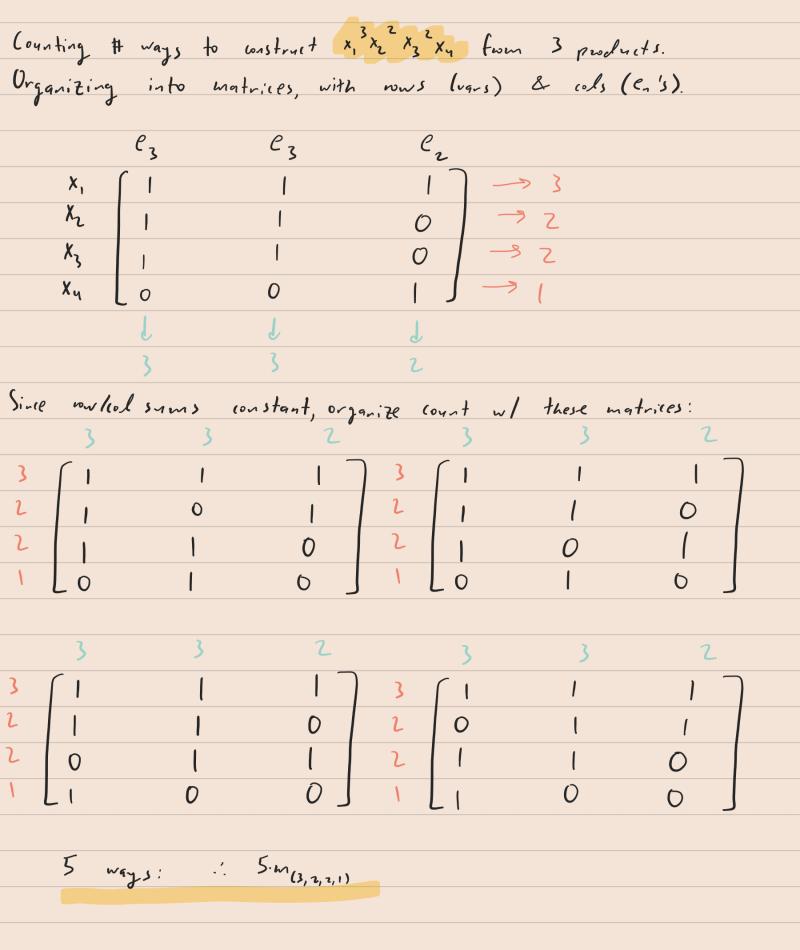
where  $\lambda = (\lambda_1, \lambda_2, ..., \lambda_{\ell})$ .

- (2) {mz: zmn} is a basis for vector space of degree n Symmetric functions.
- 3 Elementary Symmetric Function  $e_n(x_{1,...}) = \sum_{\substack{Tableaux T\\ shape 1^n\\ inc labels (7)}} weight(T)$

Ex. C3 (x, x2, x3, x4) = x, x2x3 + x, x2x4 + x, x3x4 + x2x3 x4

Define for any  $\lambda = (\lambda_1, \lambda_2, \dots) \vdash n$ :

 $E_{x}$ .  $e_{(3,3,2)}(x_1,x_2,...) = e_3 \cdot e_3 \cdot e_2$  $= (x_1 \times_2 x_3 + x_1 \times_2 x_4 + \cdots) (x_1 \times_2 x_3 + x_1 \times_2 x_4 + \cdots) (x_1 \times_2 x_2 + x_1 \times_3 x_4 + \cdots)$  $= 1 \cdot x_1^3 x_2^3 x_3^2 + \cdots + x_1^3 x_2^3 x_3 x_4 + \cdots + x_1^3 x_2^2 x_3^2 x_4$  $= 1 \cdot m_{(3,3,2)} + 2 \cdot m_{(3,3,1,1)}$ 



THM. Let 7, µ - n. Then the coefficient of my in ep is the number of 0-1 (bingy) matrices with now sum = 7 & col sum = p.

				μ		
		(4)	(3,1)	(2,2)	$(2,1^2)$	(17)
	(4)	0	O	O	0	1
	(3,1)	0	0	0	1	4
λ	(2,2)	0	O	1	2	6
	(2,12)	0	1	2	5	12
	(17)	1	4	6	12	24

$$\lambda = (2,1^{2}), \quad \mu = (2,1^{2})$$

$$2 \quad 1 \quad 1$$

$$2 \quad 1 \quad 0$$

$$1 \quad 0 \quad 0$$

$$1 \quad 0 \quad 0$$

				M		
		(4)	(3,1)	(2,2)	(2,12)	(17)
	(4)	0	O	O	0	
	(3,1)	0	0	0	1	4
λ	(2,2)	0	O	1	2	6
	$(2,1^2)$	0	1	2	5	12
	(17)	1	4	6	12	24