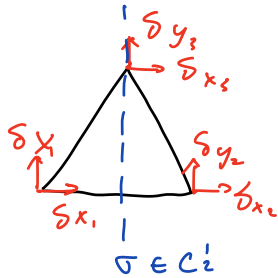P 28 . use $\chi_{v_1 \otimes v_2} = \chi_{v_1} \cdot \chi_{v_2}$ and the character theory.

P29.

$D_3 \cong S_3$ three conj. classes

$E \longleftrightarrow [()]$

$C_3 \longleftrightarrow [(123)]$

$C_2' \longleftrightarrow [(12)]$

$\chi_v(E) = 6$

$\chi_v(C_3) = 0$ ($\because$ 1,2,3 all switch places, all 0 on diagonal)

$\chi_v(C_2') = 0$ ($\sigma: \delta y_3 \to \delta y_3, \; \delta x_3 \to -\delta x_3$)

$n_p = \langle \chi_p, \chi_v \rangle$
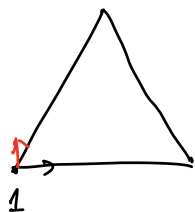
$n_{A_1} = \frac{1}{6} 1 \times 6 = 1$

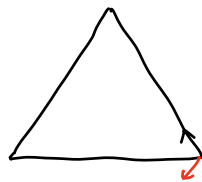$n_{A_2} = \frac{1}{6} 1 \times 6 = 1$

$n_E = \frac{1}{6} 2 \times 6 = 2$

$V \cong A_1 \oplus A_2 \oplus 2E$

	E	$2C_3$	$3C_2'$
A_1	1	1	1
A_2	1	1	-1
E	2	-1	0

V : 6   0   0

$\overset{C_3}{\longrightarrow}$

$\delta x, \delta y, \delta x_2 \delta y_2 \delta x_3 \delta y_3$

$(1, 0, 0, 0, 0, 0) \longrightarrow$

$(0, 0, -\frac{1}{2}, \frac{\sqrt{3}}{2}, 0, 0)$

$M(C_3) = \begin{pmatrix} 0 & 0 \\ 0 & 0 \\ -\frac{1}{2} & \frac{\sqrt{3}}{2} \\ \frac{\sqrt{3}}{2} & -\frac{1}{2} \\ 0 & 0 \\ 0 & 0 \end{pmatrix} \cdots$

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