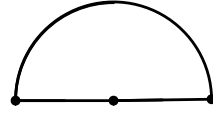# 1 r0

 $= \begin{bmatrix} 1 & 0 & 1 & -1 & 0 \\ -1 & -1 & 0 & 0 & -1 \\ 0 & 1 & -1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 1 \end{bmatrix}$

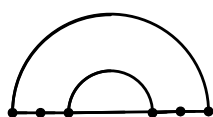$$\Psi = \alpha_0 + \alpha_1 + \alpha_2$$

$$\Psi' = 2\alpha_0$$

$$\Phi = \hat{p}\alpha_0 \left(\alpha_1 + \alpha_2\right)$$

$$\Phi' = \hat{p}\alpha_0^2$$

2 r1

 $= \begin{bmatrix} 1 & 1 & 0 & 0 & 0 & 0 & 0 & -1 & 0 \\ -1 & 0 & -1 & 0 & 0 & 0 & 0 & 0 & -1 \\ 0 & -1 & 0 & 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -1 & 1 & 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 & -1 & -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$
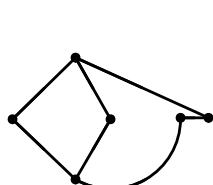
$$\Psi = \alpha_0\alpha_4 + \alpha_0\alpha_5 + \alpha_0\alpha_6 + \alpha_1\alpha_4 + \alpha_1\alpha_5 + \alpha_1\alpha_6 + \alpha_2\alpha_4 + \alpha_2\alpha_5 + \alpha_2\alpha_6 + \alpha_3\alpha_4 + \alpha_3\alpha_5 + \alpha_3\alpha_6 + \alpha_4\alpha_5 + \alpha_4\alpha_6$$

$$\Psi' = 3\alpha_0^2 - 2\alpha_0\alpha_1 - 2\alpha_0\alpha_2 - 2\alpha_0\alpha_3 - \alpha_1^2 - 2\alpha_1\alpha_2 - 2\alpha_1\alpha_3 - \alpha_2^2 - 2\alpha_2\alpha_3 - \alpha_3^2$$

$$\Phi = \hat{p}\alpha_0 \left(\alpha_1\alpha_4 + \alpha_1\alpha_5 + \alpha_1\alpha_6 + \alpha_2\alpha_4 + \alpha_2\alpha_5 + \alpha_2\alpha_6 + \alpha_3\alpha_4 + \alpha_3\alpha_5 + \alpha_3\alpha_6 + \alpha_4\alpha_5 + \alpha_4\alpha_6\right)$$

$$\Phi' = \hat{p}\alpha_0 \left(\alpha_0^2 - \alpha_1^2 - 2\alpha_1\alpha_2 - 2\alpha_1\alpha_3 - \alpha_2^2 - 2\alpha_2\alpha_3 - \alpha_3^2\right)$$

3 r10

 $= \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 1 & -1 & 0 \\ 0 & 0 & -1 & -1 & 0 & 0 & 0 & 0 & -1 \\ -1 & 1 & 0 & 0 & 0 & -1 & 0 & 0 & 0 \\ 0 & -1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 1 & 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 & -1 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$
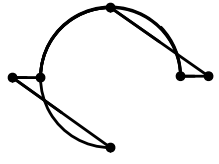
$$\Psi = \alpha_0\alpha_1 + \alpha_0\alpha_2 + \alpha_0\alpha_3 + \alpha_0\alpha_4 + \alpha_0\alpha_5 + \alpha_1\alpha_4 + \alpha_1\alpha_5 + \alpha_1\alpha_6 + \alpha_2\alpha_4 + \alpha_2\alpha_5 + \alpha_2\alpha_6 + \alpha_3\alpha_4 + \alpha_3\alpha_5 + \alpha_3\alpha_6 + \alpha_4\alpha_6 + \alpha_5\alpha_6$$

$$\Psi' = 4\alpha_0\alpha_3 - \alpha_1^2 - 2\alpha_1\alpha_2 + 2\alpha_1\alpha_3 - \alpha_2^2 + 2\alpha_2\alpha_3 - \alpha_3^2$$

$$\Phi = \hat{p} \left(\alpha_0\alpha_1\alpha_3 + \alpha_0\alpha_1\alpha_6 + \alpha_0\alpha_2\alpha_3 + \alpha_0\alpha_2\alpha_6 + \alpha_0\alpha_3\alpha_4 + \alpha_0\alpha_3\alpha_5 + \alpha_0\alpha_3\alpha_6 + \alpha_0\alpha_4\alpha_6 + \alpha_0\alpha_5\alpha_6 + \alpha_1\alpha_3\alpha_4 + \alpha_1\alpha_3\alpha_5 \right.$$
$$\left. + \alpha_1\alpha_3\alpha_6 + \alpha_1\alpha_4\alpha_6 + \alpha_1\alpha_5\alpha_6 + \alpha_2\alpha_3\alpha_4 + \alpha_2\alpha_3\alpha_5 + \alpha_2\alpha_3\alpha_6 + \alpha_2\alpha_4\alpha_6 + \alpha_2\alpha_5\alpha_6\right)$$

$$\Phi' = \hat{p} \left(2\alpha_0^2\alpha_3 - \alpha_0\alpha_1^2 - 2\alpha_0\alpha_1\alpha_2 + 4\alpha_0\alpha_1\alpha_3 - \alpha_0\alpha_2^2 + 4\alpha_0\alpha_2\alpha_3 - \alpha_0\alpha_3^2 - \alpha_1^3 - 3\alpha_1^2\alpha_2 + 2\alpha_1^2\alpha_3 - 3\alpha_1\alpha_2^2 + 4\alpha_1\alpha_2\alpha_3 - \alpha_1\alpha_3^2 \right.$$
$$\left. - \alpha_2^3 + 2\alpha_2^2\alpha_3 - \alpha_2\alpha_3^2\right)$$

4 r11

$$\vdots = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 1 & -1 & 0 \\ 0 & 0 & -1 & -1 & 0 & 0 & 0 & 0 & -1 \\ -1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 1 & 0 & -1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 1 & -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$$
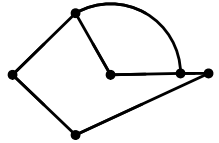
$$\Psi = \alpha_0\alpha_2 + \alpha_0\alpha_3 + \alpha_0\alpha_4 + \alpha_1\alpha_2 + \alpha_1\alpha_3 + \alpha_1\alpha_4 + \alpha_2\alpha_4 + \alpha_2\alpha_5 + \alpha_2\alpha_6 + \alpha_3\alpha_4 + \alpha_3\alpha_5 + \alpha_3\alpha_6 + \alpha_4\alpha_5 + \alpha_4\alpha_6$$

$$\Psi' = 4\alpha_0\alpha_3 - \alpha_2^2 + 2\alpha_2\alpha_3 - \alpha_3^2$$

$$\Phi = \hat{p}\,(\alpha_0\alpha_2\alpha_3 + \alpha_0\alpha_2\alpha_5 + \alpha_0\alpha_2\alpha_6 + \alpha_0\alpha_3\alpha_4 + \alpha_0\alpha_3\alpha_5 + \alpha_0\alpha_3\alpha_6 + \alpha_0\alpha_4\alpha_5 + \alpha_0\alpha_4\alpha_6 + \alpha_1\alpha_2\alpha_3 + \alpha_1\alpha_2\alpha_5 + \alpha_1\alpha_2\alpha_6$$
$$+ \alpha_1\alpha_3\alpha_4 + \alpha_1\alpha_3\alpha_5 + \alpha_1\alpha_3\alpha_6 + \alpha_1\alpha_4\alpha_5 + \alpha_1\alpha_4\alpha_6 + \alpha_2\alpha_3\alpha_4 + \alpha_2\alpha_3\alpha_5 + \alpha_2\alpha_3\alpha_6 + \alpha_2\alpha_4\alpha_5 + \alpha_2\alpha_4\alpha_6)$$

$$\Phi' = \hat{p}\,\left(2\alpha_0^2\alpha_3 - \alpha_0\alpha_2^2 + 4\alpha_0\alpha_2\alpha_3 - \alpha_0\alpha_3^2 - 2\alpha_1^2\alpha_3 + \alpha_1\alpha_2^2 - \alpha_1\alpha_3^2 - \alpha_2^3 + 2\alpha_2^2\alpha_3 - \alpha_2\alpha_3^2\right)$$

5 r2

$$\vdots = \begin{bmatrix} 1 & 0 & 1 & 0 & 0 & 0 & 0 & -1 & 0 \\ 0 & -1 & 0 & -1 & 0 & 0 & 0 & 0 & -1 \\ -1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 & -1 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & -1 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$$
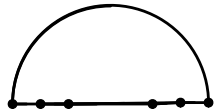
$$\Psi = \alpha_0\alpha_4 + \alpha_0\alpha_5 + \alpha_0\alpha_6 + \alpha_1\alpha_4 + \alpha_1\alpha_5 + \alpha_1\alpha_6 + \alpha_2\alpha_4 + \alpha_2\alpha_5 + \alpha_2\alpha_6 + \alpha_3\alpha_4 + \alpha_3\alpha_5 + \alpha_3\alpha_6 + \alpha_4\alpha_5 + \alpha_5\alpha_6$$

$$\Psi' = 3\alpha_0^2 + 6\alpha_0\alpha_1 - 2\alpha_0\alpha_2 - 2\alpha_0\alpha_3 + 4\alpha_0\alpha_4 + 3\alpha_1^2 - 2\alpha_1\alpha_2 - 2\alpha_1\alpha_3 + 4\alpha_1\alpha_4 - \alpha_2^2 - 2\alpha_2\alpha_3 - \alpha_3^2$$

$$\Phi = \hat{p}\,(\alpha_0\alpha_2\alpha_4 + \alpha_0\alpha_2\alpha_5 + \alpha_0\alpha_2\alpha_6 + \alpha_0\alpha_3\alpha_4 + \alpha_0\alpha_3\alpha_5 + \alpha_0\alpha_3\alpha_6 + \alpha_0\alpha_4\alpha_5 + \alpha_0\alpha_5\alpha_6 + \alpha_1\alpha_2\alpha_4 + \alpha_1\alpha_2\alpha_5 + \alpha_1\alpha_2\alpha_6$$
$$+ \alpha_1\alpha_3\alpha_4 + \alpha_1\alpha_3\alpha_5 + \alpha_1\alpha_3\alpha_6 + \alpha_1\alpha_4\alpha_5 + \alpha_1\alpha_5\alpha_6)$$

$$\Phi' = \hat{p}\,\left(\alpha_0^3 + 3\alpha_0^2\alpha_1 + 2\alpha_0^2\alpha_4 + 3\alpha_0\alpha_1^2 + 4\alpha_0\alpha_1\alpha_4 - \alpha_0\alpha_2^2 - 2\alpha_0\alpha_2\alpha_3 - \alpha_0\alpha_3^2 + \alpha_1^3 + 2\alpha_1^2\alpha_4 - \alpha_1\alpha_2^2 - 2\alpha_1\alpha_2\alpha_3 - \alpha_1\alpha_3^2\right)$$

6 r3

$$\vdots = \begin{bmatrix} 1 & 1 & 0 & 0 & 0 & 0 & 0 & -1 & 0 \\ -1 & 0 & -1 & 0 & 0 & 0 & 0 & 0 & -1 \\ 0 & -1 & 0 & 0 & 0 & -1 & 1 & 0 & 0 \\ 0 & 0 & 1 & -1 & -1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$$

$$\Psi = \alpha_0\alpha_3 + \alpha_0\alpha_4 + \alpha_0\alpha_5 + \alpha_0\alpha_6 + \alpha_1\alpha_3 + \alpha_1\alpha_4 + \alpha_1\alpha_5 + \alpha_1\alpha_6 + \alpha_2\alpha_3 + \alpha_2\alpha_4 + \alpha_2\alpha_5 + \alpha_2\alpha_6 + \alpha_3\alpha_4 + \alpha_3\alpha_6 + \alpha_4\alpha_5 + \alpha_5\alpha_6$$

$$\Psi' = -\alpha_0^2 + 2\alpha_0\alpha_1 + 2\alpha_0\alpha_2 + 4\alpha_0\alpha_3 - \alpha_1^2 - 2\alpha_1\alpha_2 - \alpha_2^2$$

$$\Phi = \hat{p}\alpha_0\,(\alpha_1\alpha_3 + \alpha_1\alpha_4 + \alpha_1\alpha_5 + \alpha_1\alpha_6 + \alpha_2\alpha_3 + \alpha_2\alpha_4 + \alpha_2\alpha_5 + \alpha_2\alpha_6 + \alpha_3\alpha_4 + \alpha_3\alpha_6 + \alpha_4\alpha_5 + \alpha_5\alpha_6)$$

$$\Phi' = \hat{p}\alpha_0\,\left(-\alpha_0^2 + 2\alpha_0\alpha_1 + 2\alpha_0\alpha_2 + 2\alpha_0\alpha_3 - \alpha_1^2 - 2\alpha_1\alpha_2 - \alpha_2^2\right)$$

7 r4

$$\begin{bmatrix} 1 & 1 & 0 & 0 & 0 & 0 & 0 & -1 & 0 \\ -1 & 0 & 0 & 0 & -1 & 0 & 0 & 0 & -1 \\ 0 & -1 & 1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 1 & 0 & 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -1 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$$

$$\Psi = \alpha_0\alpha_2 + \alpha_0\alpha_5 + \alpha_0\alpha_6 + \alpha_1\alpha_2 + \alpha_1\alpha_5 + \alpha_1\alpha_6 + \alpha_2\alpha_3 + \alpha_2\alpha_4 + \alpha_2\alpha_5 + \alpha_2\alpha_6 + \alpha_3\alpha_5 + \alpha_3\alpha_6 + \alpha_4\alpha_5 + \alpha_4\alpha_6$$

$$\Psi' = \alpha_2\left(4\alpha_0 - \alpha_2\right)$$

$$\Phi = \hat{p}\alpha_0\left(\alpha_1\alpha_2 + \alpha_1\alpha_5 + \alpha_1\alpha_6 + \alpha_2\alpha_3 + \alpha_2\alpha_4 + \alpha_2\alpha_5 + \alpha_2\alpha_6 + \alpha_3\alpha_5 + \alpha_3\alpha_6 + \alpha_4\alpha_5 + \alpha_4\alpha_6\right)$$

$$\Phi' = \hat{p}\alpha_0\alpha_2\left(2\alpha_0 - \alpha_2\right)$$

8 r5

$$\begin{bmatrix} 1 & 1 & 0 & 0 & 0 & -1 & 0 \\ -1 & 0 & -1 & 0 & 0 & 0 & -1 \\ 0 & -1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & -1 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$$

$$\Psi = \alpha_0\alpha_3 + \alpha_0\alpha_4 + \alpha_1\alpha_3 + \alpha_1\alpha_4 + \alpha_2\alpha_3 + \alpha_2\alpha_4 + \alpha_3\alpha_4$$

$$\Psi' = -\left(-\alpha_0 + \alpha_1 + \alpha_2\right)\left(3\alpha_0 + \alpha_1 + \alpha_2\right)$$

$$\Phi = \hat{p}\alpha_0\left(\alpha_1\alpha_3 + \alpha_1\alpha_4 + \alpha_2\alpha_3 + \alpha_2\alpha_4 + \alpha_3\alpha_4\right)$$

$$\Phi' = -\hat{p}\alpha_0\left(-\alpha_0 + \alpha_1 + \alpha_2\right)\left(\alpha_0 + \alpha_1 + \alpha_2\right)$$

9 r6

$$\begin{bmatrix} 1 & 0 & 1 & 0 & 0 & 0 & 0 & -1 & 0 \\ 0 & -1 & 0 & 0 & -1 & 0 & 0 & 0 & -1 \\ -1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & -1 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$$
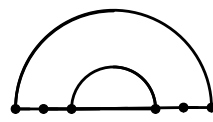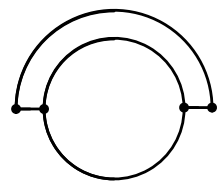
$$\Psi = \alpha_0\alpha_5 + \alpha_0\alpha_6 + \alpha_1\alpha_5 + \alpha_1\alpha_6 + \alpha_2\alpha_5 + \alpha_2\alpha_6 + \alpha_3\alpha_5 + \alpha_3\alpha_6 + \alpha_4\alpha_5 + \alpha_4\alpha_6 + \alpha_5\alpha_6$$

$$\Psi' = -\left(-\alpha_0 - \alpha_1 + \alpha_2 + \alpha_3 + \alpha_4\right)\left(3\alpha_0 + 3\alpha_1 + \alpha_2 + \alpha_3 + \alpha_4\right)$$

$$\Phi = \hat{p}\left(\alpha_0\alpha_2\alpha_5 + \alpha_0\alpha_2\alpha_6 + \alpha_0\alpha_3\alpha_5 + \alpha_0\alpha_3\alpha_6 + \alpha_0\alpha_4\alpha_5 + \alpha_0\alpha_4\alpha_6 + \alpha_0\alpha_5\alpha_6 + \alpha_1\alpha_2\alpha_5 + \alpha_1\alpha_2\alpha_6 + \alpha_1\alpha_3\alpha_5 + \alpha_1\alpha_3\alpha_6 \\ + \alpha_1\alpha_4\alpha_5 + \alpha_1\alpha_4\alpha_6 + \alpha_1\alpha_5\alpha_6\right)$$

$$\Phi' = \hat{p}\left(-\alpha_0 - \alpha_1 + \alpha_2 + \alpha_3 + \alpha_4\right)\left(-2\alpha_0\alpha_2 - 2\alpha_0\alpha_3 - 2\alpha_0\alpha_4 + \alpha_0\left(-\alpha_0 - \alpha_1 + \alpha_2 + \alpha_3 + \alpha_4\right) - 2\alpha_1\alpha_2 - 2\alpha_1\alpha_3 - 2\alpha_1\alpha_4 \\ + \alpha_1\left(-\alpha_0 - \alpha_1 + \alpha_2 + \alpha_3 + \alpha_4\right)\right)$$

$$= \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 1 & 0 & -1 & 0 \\ 0 & 0 & -1 & -1 & 0 & 0 & 0 & 0 & -1 \\ -1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 1 & 0 & 0 & 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 1 & -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -1 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$$
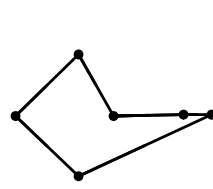
$$\Psi = \alpha_0\alpha_2 + \alpha_0\alpha_3 + \alpha_0\alpha_4 + \alpha_0\alpha_6 + \alpha_1\alpha_2 + \alpha_1\alpha_3 + \alpha_1\alpha_4 + \alpha_1\alpha_6 + \alpha_2\alpha_4 + \alpha_2\alpha_5 + \alpha_2\alpha_6 + \alpha_3\alpha_4 + \alpha_3\alpha_5 + \alpha_3\alpha_6 + \alpha_4\alpha_5 + \alpha_5\alpha_6$$

$$\Psi' = 4\alpha_0\alpha_3 - \alpha_2^2 + 2\alpha_2\alpha_3 - \alpha_3^2$$

$$\Phi = \hat{p}\,(\alpha_0\alpha_2\alpha_3 + \alpha_0\alpha_2\alpha_5 + \alpha_0\alpha_3\alpha_4 + \alpha_0\alpha_3\alpha_5 + \alpha_0\alpha_3\alpha_6 + \alpha_0\alpha_4\alpha_5 + \alpha_0\alpha_5\alpha_6 + \alpha_1\alpha_2\alpha_3 + \alpha_1\alpha_2\alpha_5 + \alpha_1\alpha_3\alpha_4 + \alpha_1\alpha_3\alpha_5 \\ + \alpha_1\alpha_3\alpha_6 + \alpha_1\alpha_4\alpha_5 + \alpha_1\alpha_5\alpha_6 + \alpha_2\alpha_3\alpha_4 + \alpha_2\alpha_3\alpha_5 + \alpha_2\alpha_3\alpha_6 + \alpha_2\alpha_4\alpha_5 + \alpha_2\alpha_5\alpha_6)$$

$$\Phi' = \hat{p}\,(2\alpha_0^2\alpha_3 - \alpha_0\alpha_2^2 + 4\alpha_0\alpha_2\alpha_3 - \alpha_0\alpha_3^2 - 2\alpha_1^2\alpha_3 + \alpha_1\alpha_2^2 - \alpha_1\alpha_3^2 - \alpha_2^3 + 2\alpha_2^2\alpha_3 - \alpha_2\alpha_3^2)$$

$$= \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 1 & -1 & 0 \\ 0 & 0 & -1 & -1 & 0 & 0 & 0 & 0 & -1 \\ -1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & -1 & -1 & 0 & 0 \\ 0 & 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$$
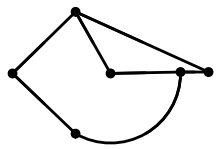
$$\Psi = \alpha_0\alpha_2 + \alpha_0\alpha_3 + \alpha_0\alpha_4 + \alpha_0\alpha_5 + \alpha_1\alpha_2 + \alpha_1\alpha_3 + \alpha_1\alpha_4 + \alpha_1\alpha_5 + \alpha_2\alpha_5 + \alpha_2\alpha_6 + \alpha_3\alpha_5 + \alpha_3\alpha_6 + \alpha_4\alpha_5 + \alpha_4\alpha_6 + \alpha_5\alpha_6$$

$$\Psi' = 4\alpha_0\alpha_2 + 3\alpha_2^2 - 2\alpha_2\alpha_3 - 2\alpha_2\alpha_4 - \alpha_3^2 - 2\alpha_3\alpha_4 - \alpha_4^2$$

$$\Phi = \hat{p}\,(\alpha_0\alpha_2\alpha_3 + \alpha_0\alpha_2\alpha_4 + \alpha_0\alpha_2\alpha_6 + \alpha_0\alpha_3\alpha_5 + \alpha_0\alpha_3\alpha_6 + \alpha_0\alpha_4\alpha_5 + \alpha_0\alpha_4\alpha_6 + \alpha_0\alpha_5\alpha_6 + \alpha_1\alpha_2\alpha_3 + \alpha_1\alpha_2\alpha_4 + \alpha_1\alpha_2\alpha_6 \\ + \alpha_1\alpha_3\alpha_5 + \alpha_1\alpha_3\alpha_6 + \alpha_1\alpha_4\alpha_5 + \alpha_1\alpha_4\alpha_6 + \alpha_1\alpha_5\alpha_6 + \alpha_2\alpha_3\alpha_5 + \alpha_2\alpha_3\alpha_6 + \alpha_2\alpha_4\alpha_5 + \alpha_2\alpha_4\alpha_6 + \alpha_2\alpha_5\alpha_6)$$

$$\Phi' = \hat{p}\,(2\alpha_0^2\alpha_2 + 3\alpha_0\alpha_2^2 - \alpha_0\alpha_3^2 - 2\alpha_0\alpha_3\alpha_4 - \alpha_0\alpha_4^2 - 2\alpha_1^2\alpha_2 + \alpha_1\alpha_2^2 - \alpha_1\alpha_3^2 - 2\alpha_1\alpha_3\alpha_4 - \alpha_1\alpha_4^2 + \alpha_2^3 - \alpha_2\alpha_3^2 - 2\alpha_2\alpha_3\alpha_4 - \alpha_2\alpha_4^2)$$

$$= \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 1 & -1 & 0 \\ 0 & 0 & 0 & -1 & -1 & 0 & 0 & 0 & -1 \\ -1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 1 & 0 & 0 & -1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 1 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$$
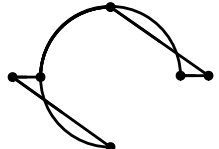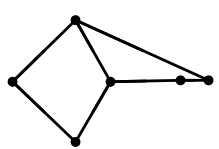
$$\Psi = \alpha_0\alpha_2 + \alpha_0\alpha_3 + \alpha_0\alpha_4 + \alpha_0\alpha_5 + \alpha_1\alpha_2 + \alpha_1\alpha_3 + \alpha_1\alpha_4 + \alpha_1\alpha_5 + \alpha_2\alpha_5 + \alpha_2\alpha_6 + \alpha_3\alpha_5 + \alpha_3\alpha_6 + \alpha_4\alpha_5 + \alpha_4\alpha_6 + \alpha_5\alpha_6$$

$$\Psi' = 4\alpha_0\alpha_4 - \alpha_2^2 - 2\alpha_2\alpha_3 + 2\alpha_2\alpha_4 - \alpha_3^2 + 2\alpha_3\alpha_4 - \alpha_4^2$$

$$\Phi = \hat{p}\,(\alpha_0\alpha_2\alpha_4 + \alpha_0\alpha_2\alpha_6 + \alpha_0\alpha_3\alpha_4 + \alpha_0\alpha_3\alpha_6 + \alpha_0\alpha_4\alpha_5 + \alpha_0\alpha_4\alpha_6 + \alpha_0\alpha_5\alpha_6 + \alpha_1\alpha_2\alpha_4 + \alpha_1\alpha_2\alpha_6 + \alpha_1\alpha_3\alpha_4 + \alpha_1\alpha_3\alpha_6$$
$$+ \alpha_1\alpha_4\alpha_5 + \alpha_1\alpha_4\alpha_6 + \alpha_1\alpha_5\alpha_6 + \alpha_2\alpha_4\alpha_5 + \alpha_2\alpha_4\alpha_6 + \alpha_2\alpha_5\alpha_6 + \alpha_3\alpha_4\alpha_5 + \alpha_3\alpha_4\alpha_6 + \alpha_3\alpha_5\alpha_6)$$

$$\Phi' = \hat{p}\,(2\alpha_0^2\alpha_4 - \alpha_0\alpha_2^2 - 2\alpha_0\alpha_2\alpha_3 + 4\alpha_0\alpha_2\alpha_4 - \alpha_0\alpha_3^2 + 4\alpha_0\alpha_3\alpha_4 - \alpha_0\alpha_4^2 - 2\alpha_1^2\alpha_4 + \alpha_1\alpha_2^2 + 2\alpha_1\alpha_2\alpha_3 + \alpha_1\alpha_3^2 - \alpha_1\alpha_4^2 - \alpha_2^3$$
$$- 3\alpha_2^2\alpha_3 + 2\alpha_2^2\alpha_4 - 3\alpha_2\alpha_3^2 + 4\alpha_2\alpha_3\alpha_4 - \alpha_2\alpha_4^2 - \alpha_3^3 + 2\alpha_3^2\alpha_4 - \alpha_3\alpha_4^2)$$

13 c0

$$\begin{bmatrix} 1 & 0 & 1 & 0 & -1 & 0 \\ 0 & -1 & 0 & -1 & 0 & -1 \\ -1 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & -1 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$$
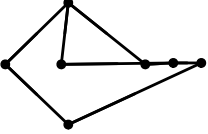
$$\Psi = \alpha_0 + \alpha_1 + \alpha_2 + \alpha_3$$

$$\Psi' = 2\alpha_0 + 2\alpha_1$$

$$\Phi = \hat{p}\,(\alpha_0\alpha_2 + \alpha_0\alpha_3 + \alpha_1\alpha_2 + \alpha_1\alpha_3)$$

$$\Phi' = \hat{p}\,(\alpha_0^2 + 2\alpha_0\alpha_1 + \alpha_1^2)$$

14 c1

$$\begin{bmatrix} 1 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & -1 & 0 \\ 0 & -1 & 0 & -1 & 0 & 0 & 0 & 0 & 0 & -1 \\ -1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 & 1 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 & -1 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 & -1 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -1 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$$

$$\Psi = \alpha_0\alpha_4 + \alpha_0\alpha_5 + \alpha_0\alpha_6 + \alpha_0\alpha_7 + \alpha_1\alpha_4 + \alpha_1\alpha_5 + \alpha_1\alpha_6 + \alpha_1\alpha_7 + \alpha_2\alpha_4 + \alpha_2\alpha_5$$
$$+ \alpha_2\alpha_6 + \alpha_2\alpha_7 + \alpha_3\alpha_4 + \alpha_3\alpha_5 + \alpha_3\alpha_6 + \alpha_3\alpha_7 + \alpha_4\alpha_5 + \alpha_4\alpha_7 + \alpha_5\alpha_6 + \alpha_6\alpha_7$$

$$\Psi' = 3\alpha_0^2 + 6\alpha_0\alpha_1 - 2\alpha_0\alpha_2 - 2\alpha_0\alpha_3 + 3\alpha_1^2 - 2\alpha_1\alpha_2 - 2\alpha_1\alpha_3 - \alpha_2^2 - 2\alpha_2\alpha_3 - \alpha_3^2$$

$$\Phi = \hat{p}\,(\alpha_0\alpha_2\alpha_4 + \alpha_0\alpha_2\alpha_5 + \alpha_0\alpha_2\alpha_6 + \alpha_0\alpha_2\alpha_7 + \alpha_0\alpha_3\alpha_4 + \alpha_0\alpha_3\alpha_5 + \alpha_0\alpha_3\alpha_6 + \alpha_0\alpha_3\alpha_7 + \alpha_0\alpha_4\alpha_5 + \alpha_0\alpha_4\alpha_7 + \alpha_0\alpha_5\alpha_6 + \alpha_0\alpha_6\alpha_7$$
$$+ \alpha_1\alpha_2\alpha_4 + \alpha_1\alpha_2\alpha_5 + \alpha_1\alpha_2\alpha_6 + \alpha_1\alpha_2\alpha_7 + \alpha_1\alpha_3\alpha_4 + \alpha_1\alpha_3\alpha_5 + \alpha_1\alpha_3\alpha_6 + \alpha_1\alpha_3\alpha_7 + \alpha_1\alpha_4\alpha_5 + \alpha_1\alpha_4\alpha_7 + \alpha_1\alpha_5\alpha_6 + \alpha_1\alpha_6\alpha_7)$$

$$\Phi' = \hat{p}\,(\alpha_0^3 + 3\alpha_0^2\alpha_1 + 3\alpha_0\alpha_1^2 - \alpha_0\alpha_2^2 - 2\alpha_0\alpha_2\alpha_3 - \alpha_0\alpha_3^2 + \alpha_1^3 - \alpha_1\alpha_2^2 - 2\alpha_1\alpha_2\alpha_3 - \alpha_1\alpha_3^2)$$

15   c2

$$\doteq \begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & -1 & 0 \\ 0 & -1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & -1 \\ -1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -1 & -1 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 1 & 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -1 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$$

$$\Psi = \alpha_0\alpha_5 + \alpha_0\alpha_6 + \alpha_0\alpha_7 + \alpha_1\alpha_5 + \alpha_1\alpha_6 + \alpha_1\alpha_7 + \alpha_2\alpha_5 + \alpha_2\alpha_6 + \alpha_2\alpha_7 + \alpha_3\alpha_5 + \alpha_3\alpha_6 + \alpha_3\alpha_7 + \alpha_4\alpha_5 + \alpha_4\alpha_6 + \alpha_4\alpha_7 + \alpha_5\alpha_6 + \alpha_5\alpha_7$$

$$\Psi' = -\alpha_0^2 - 2\alpha_0\alpha_1 + 2\alpha_0\alpha_2 + 2\alpha_0\alpha_3 + 2\alpha_0\alpha_4 - \alpha_1^2 + 2\alpha_1\alpha_2 + 2\alpha_1\alpha_3 + 2\alpha_1\alpha_4 - \alpha_2^2 - 2\alpha_2\alpha_3 - 2\alpha_2\alpha_4 - \alpha_3^2 - 2\alpha_3\alpha_4 - \alpha_4^2$$

$$\Phi = \hat{p}\,(\alpha_0\alpha_2\alpha_5 + \alpha_0\alpha_2\alpha_6 + \alpha_0\alpha_2\alpha_7 + \alpha_0\alpha_3\alpha_5 + \alpha_0\alpha_3\alpha_6 + \alpha_0\alpha_3\alpha_7 + \alpha_0\alpha_4\alpha_5 + \alpha_0\alpha_4\alpha_6 + \alpha_0\alpha_4\alpha_7 + \alpha_0\alpha_5\alpha_6 + \alpha_0\alpha_5\alpha_7 + \alpha_1\alpha_2\alpha_5 \\ + \alpha_1\alpha_2\alpha_6 + \alpha_1\alpha_2\alpha_7 + \alpha_1\alpha_3\alpha_5 + \alpha_1\alpha_3\alpha_6 + \alpha_1\alpha_3\alpha_7 + \alpha_1\alpha_4\alpha_5 + \alpha_1\alpha_4\alpha_6 + \alpha_1\alpha_4\alpha_7 + \alpha_1\alpha_5\alpha_6 + \alpha_1\alpha_5\alpha_7)$$

$$\Phi' = \hat{p}\,\big(-\alpha_0^3 - 3\alpha_0^2\alpha_1 + 2\alpha_0^2\alpha_2 + 2\alpha_0^2\alpha_3 + 2\alpha_0^2\alpha_4 - 3\alpha_0\alpha_1^2 + 4\alpha_0\alpha_1\alpha_2 + 4\alpha_0\alpha_1\alpha_3 + 4\alpha_0\alpha_1\alpha_4 - \alpha_0\alpha_2^2 - 2\alpha_0\alpha_2\alpha_3 - 2\alpha_0\alpha_2\alpha_4 - \alpha_0\alpha_3^2 \\ - 2\alpha_0\alpha_3\alpha_4 - \alpha_0\alpha_4^2 - \alpha_1^3 + 2\alpha_1^2\alpha_2 + 2\alpha_1^2\alpha_3 + 2\alpha_1^2\alpha_4 - \alpha_1\alpha_2^2 - 2\alpha_1\alpha_2\alpha_3 - 2\alpha_1\alpha_2\alpha_4 - \alpha_1\alpha_3^2 - 2\alpha_1\alpha_3\alpha_4 - \alpha_1\alpha_4^2\big)$$

16   c3

$$\doteq \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & -1 & 0 \\ 0 & -1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & -1 \\ -1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 & 0 & -1 & 0 & 0 \\ 0 & 0 & 1 & 0 & -1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -1 & 0 & -1 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 1 & -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$$

$$\Psi = \alpha_0\alpha_5 + \alpha_0\alpha_6 + \alpha_1\alpha_5 + \alpha_1\alpha_6 + \alpha_2\alpha_5 + \alpha_2\alpha_6 + \alpha_3\alpha_5 + \alpha_3\alpha_6 + \alpha_4\alpha_5 + \alpha_4\alpha_6 + \alpha_5\alpha_6 + \alpha_5\alpha_7 + \alpha_6\alpha_7$$

$$\Psi' = -\alpha_5^2$$

$$\Phi = \hat{p}\,(\alpha_0\alpha_2\alpha_5 + \alpha_0\alpha_2\alpha_6 + \alpha_0\alpha_3\alpha_5 + \alpha_0\alpha_3\alpha_6 + \alpha_0\alpha_4\alpha_5 + \alpha_0\alpha_4\alpha_6 + \alpha_0\alpha_5\alpha_6 + \alpha_0\alpha_5\alpha_7 + \alpha_0\alpha_6\alpha_7 + \alpha_1\alpha_2\alpha_5 + \alpha_1\alpha_2\alpha_6 \\ + \alpha_1\alpha_3\alpha_5 + \alpha_1\alpha_3\alpha_6 + \alpha_1\alpha_4\alpha_5 + \alpha_1\alpha_4\alpha_6 + \alpha_1\alpha_5\alpha_6 + \alpha_1\alpha_5\alpha_7 + \alpha_1\alpha_6\alpha_7)$$

$$\Phi' = -\hat{p}\alpha_5^2\,(\alpha_0 + \alpha_1)$$

17   c4

$$\doteq \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & -1 & 0 \\ 0 & 0 & -1 & 0 & -1 & 0 & 0 & 0 & 0 & -1 \\ -1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & -1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & -1 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$$
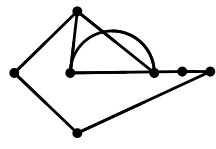
$$\Psi = \alpha_0\alpha_2 + \alpha_0\alpha_3 + \alpha_0\alpha_4 + \alpha_0\alpha_5 + \alpha_0\alpha_6 + \alpha_1\alpha_2 + \alpha_1\alpha_3 + \alpha_1\alpha_4 + \alpha_1\alpha_5 + \alpha_1\alpha_6$$
$$+ \alpha_2\alpha_6 + \alpha_2\alpha_7 + \alpha_3\alpha_6 + \alpha_3\alpha_7 + \alpha_4\alpha_6 + \alpha_4\alpha_7 + \alpha_5\alpha_6 + \alpha_5\alpha_7 + \alpha_6\alpha_7$$

$$\Psi' = 4\alpha_0\alpha_2 + 3\alpha_2^2 - 2\alpha_2\alpha_3 - 2\alpha_2\alpha_4 - 2\alpha_2\alpha_5 - \alpha_3^2 - 2\alpha_3\alpha_4 - 2\alpha_3\alpha_5 - \alpha_4^2 - 2\alpha_4\alpha_5 - \alpha_5^2$$

$$\Phi = \hat{p}\,(\alpha_0\alpha_2\alpha_4 + \alpha_0\alpha_2\alpha_5 + \alpha_0\alpha_2\alpha_7 + \alpha_0\alpha_3\alpha_4 + \alpha_0\alpha_3\alpha_5 + \alpha_0\alpha_3\alpha_7 + \alpha_0\alpha_4\alpha_6 + \alpha_0\alpha_4\alpha_7 + \alpha_0\alpha_5\alpha_6 + \alpha_0\alpha_5\alpha_7 + \alpha_0\alpha_6\alpha_7$$
$$+ \alpha_1\alpha_2\alpha_4 + \alpha_1\alpha_2\alpha_5 + \alpha_1\alpha_2\alpha_7 + \alpha_1\alpha_3\alpha_4 + \alpha_1\alpha_3\alpha_5 + \alpha_1\alpha_3\alpha_7 + \alpha_1\alpha_4\alpha_6 + \alpha_1\alpha_4\alpha_7 + \alpha_1\alpha_5\alpha_6 + \alpha_1\alpha_5\alpha_7 + \alpha_1\alpha_6\alpha_7$$
$$+ \alpha_2\alpha_4\alpha_6 + \alpha_2\alpha_4\alpha_7 + \alpha_2\alpha_5\alpha_6 + \alpha_2\alpha_5\alpha_7 + \alpha_2\alpha_6\alpha_7 + \alpha_3\alpha_4\alpha_6 + \alpha_3\alpha_4\alpha_7 + \alpha_3\alpha_5\alpha_6 + \alpha_3\alpha_5\alpha_7 + \alpha_3\alpha_6\alpha_7)$$

$$\Phi' = \hat{p}\,(2\alpha_0^2\alpha_2 + 3\alpha_0\alpha_2^2 - 2\alpha_0\alpha_2\alpha_3 - \alpha_0\alpha_3^2 - \alpha_0\alpha_4^2 - 2\alpha_0\alpha_4\alpha_5 - \alpha_0\alpha_5^2 - 2\alpha_1^2\alpha_2 + \alpha_1\alpha_2^2 - 2\alpha_1\alpha_2\alpha_3 + \alpha_1\alpha_3^2 - \alpha_1\alpha_4^2 - 2\alpha_1\alpha_4\alpha_5$$
$$- \alpha_1\alpha_5^2 + \alpha_2^3 - \alpha_2^2\alpha_3 - \alpha_2\alpha_3^2 - \alpha_2\alpha_4^2 - 2\alpha_2\alpha_4\alpha_5 - \alpha_2\alpha_5^2 + \alpha_3^3 - \alpha_3\alpha_4^2 - 2\alpha_3\alpha_4\alpha_5 - \alpha_3\alpha_5^2)$$

18   c5

$$\vdots = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & -1 & 0 \\ 0 & 0 & -1 & -1 & 0 & 0 & 0 & 0 & 0 & -1 \\ -1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -1 & 1 & 0 & 0 & 0 & -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 1 & 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -1 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$$
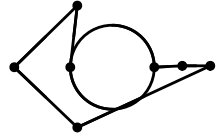
$$\Psi = \alpha_0\alpha_2 + \alpha_0\alpha_3 + \alpha_0\alpha_4 + \alpha_0\alpha_5 + \alpha_0\alpha_6 + \alpha_1\alpha_2 + \alpha_1\alpha_3 + \alpha_1\alpha_4 + \alpha_1\alpha_5 + \alpha_1\alpha_6 + \alpha_2\alpha_5$$
$$+ \alpha_2\alpha_6 + \alpha_2\alpha_7 + \alpha_3\alpha_5 + \alpha_3\alpha_6 + \alpha_3\alpha_7 + \alpha_4\alpha_5 + \alpha_4\alpha_6 + \alpha_4\alpha_7 + \alpha_5\alpha_7 + \alpha_6\alpha_7$$

$$\Psi' = 4\alpha_0\alpha_3 + 4\alpha_0\alpha_4 + 4\alpha_1\alpha_3 + 4\alpha_1\alpha_4 - \alpha_2^2 + 2\alpha_2\alpha_3 + 2\alpha_2\alpha_4 - \alpha_3^2 - 2\alpha_3\alpha_4 - \alpha_4^2$$

$$\Phi = \hat{p}\,(\alpha_0\alpha_2\alpha_3 + \alpha_0\alpha_2\alpha_4 + \alpha_0\alpha_2\alpha_7 + \alpha_0\alpha_3\alpha_5 + \alpha_0\alpha_3\alpha_6 + \alpha_0\alpha_3\alpha_7 + \alpha_0\alpha_4\alpha_5 + \alpha_0\alpha_4\alpha_6 + \alpha_0\alpha_4\alpha_7 + \alpha_0\alpha_5\alpha_7 + \alpha_0\alpha_6\alpha_7$$
$$+ \alpha_1\alpha_2\alpha_3 + \alpha_1\alpha_2\alpha_4 + \alpha_1\alpha_2\alpha_7 + \alpha_1\alpha_3\alpha_5 + \alpha_1\alpha_3\alpha_6 + \alpha_1\alpha_3\alpha_7 + \alpha_1\alpha_4\alpha_5 + \alpha_1\alpha_4\alpha_6 + \alpha_1\alpha_4\alpha_7 + \alpha_1\alpha_5\alpha_7 + \alpha_1\alpha_6\alpha_7$$
$$+ \alpha_2\alpha_3\alpha_5 + \alpha_2\alpha_3\alpha_6 + \alpha_2\alpha_3\alpha_7 + \alpha_2\alpha_4\alpha_5 + \alpha_2\alpha_4\alpha_6 + \alpha_2\alpha_4\alpha_7 + \alpha_2\alpha_5\alpha_7 + \alpha_2\alpha_6\alpha_7)$$

$$\Phi' = \hat{p}\,(2\alpha_0^2\alpha_3 + 2\alpha_0^2\alpha_4 + 4\alpha_0\alpha_1\alpha_3 + 4\alpha_0\alpha_1\alpha_4 - \alpha_0\alpha_2^2 + 4\alpha_0\alpha_2\alpha_3 + 4\alpha_0\alpha_2\alpha_4 - \alpha_0\alpha_3^2 - 2\alpha_0\alpha_3\alpha_4 - \alpha_0\alpha_4^2 + 2\alpha_1^2\alpha_3 + 2\alpha_1^2\alpha_4$$
$$- \alpha_1\alpha_2^2 + 4\alpha_1\alpha_2\alpha_3 + 4\alpha_1\alpha_2\alpha_4 - \alpha_1\alpha_3^2 - 2\alpha_1\alpha_3\alpha_4 - \alpha_1\alpha_4^2 - \alpha_2^3 + 2\alpha_2^2\alpha_3 + 2\alpha_2^2\alpha_4 - \alpha_2\alpha_3^2 - 2\alpha_2\alpha_3\alpha_4 - \alpha_2\alpha_4^2)$$

19   c6

$$\vdots = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & -1 & 0 \\ 0 & 0 & -1 & -1 & 0 & 0 & 0 & 0 & 0 & -1 \\ -1 & 1 & 0 & 0 & 0 & 0 & -1 & 0 & 0 & 0 \\ 0 & -1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & -1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 1 & 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -1 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$$
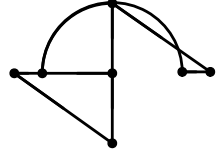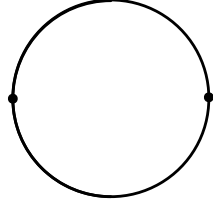
$$\Psi = \alpha_0\alpha_1 + \alpha_0\alpha_2 + \alpha_0\alpha_3 + \alpha_0\alpha_4 + \alpha_0\alpha_5 + \alpha_0\alpha_6 + \alpha_1\alpha_5 + \alpha_1\alpha_6 + \alpha_1\alpha_7 + \alpha_2\alpha_5$$
$$+ \alpha_2\alpha_6 + \alpha_2\alpha_7 + \alpha_3\alpha_5 + \alpha_3\alpha_6 + \alpha_3\alpha_7 + \alpha_4\alpha_5 + \alpha_4\alpha_6 + \alpha_4\alpha_7 + \alpha_5\alpha_7 + \alpha_6\alpha_7$$

$$\Psi' = 4\alpha_0\alpha_3 + 4\alpha_0\alpha_4 - \alpha_1^2 - 2\alpha_1\alpha_2 + 2\alpha_1\alpha_3 + 2\alpha_1\alpha_4 - \alpha_2^2 + 2\alpha_2\alpha_3 + 2\alpha_2\alpha_4 - \alpha_3^2 - 2\alpha_3\alpha_4 - \alpha_4^2$$

$$\Phi = \hat{p}\,(\alpha_0\alpha_1\alpha_3 + \alpha_0\alpha_1\alpha_4 + \alpha_0\alpha_1\alpha_7 + \alpha_0\alpha_2\alpha_3 + \alpha_0\alpha_2\alpha_4 + \alpha_0\alpha_2\alpha_7 + \alpha_0\alpha_3\alpha_5 + \alpha_0\alpha_3\alpha_6 + \alpha_0\alpha_3\alpha_7 + \alpha_0\alpha_4\alpha_5 + \alpha_0\alpha_4\alpha_6$$
$$+ \alpha_0\alpha_4\alpha_7 + \alpha_0\alpha_5\alpha_7 + \alpha_0\alpha_6\alpha_7 + \alpha_1\alpha_3\alpha_5 + \alpha_1\alpha_3\alpha_6 + \alpha_1\alpha_3\alpha_7 + \alpha_1\alpha_4\alpha_5 + \alpha_1\alpha_4\alpha_6 + \alpha_1\alpha_4\alpha_7 + \alpha_1\alpha_5\alpha_7 + \alpha_1\alpha_6\alpha_7$$
$$+ \alpha_2\alpha_3\alpha_5 + \alpha_2\alpha_3\alpha_6 + \alpha_2\alpha_3\alpha_7 + \alpha_2\alpha_4\alpha_5 + \alpha_2\alpha_4\alpha_6 + \alpha_2\alpha_4\alpha_7 + \alpha_2\alpha_5\alpha_7 + \alpha_2\alpha_6\alpha_7)$$

$$\Phi' = \hat{p}\,(2\alpha_0^2\alpha_3 + 2\alpha_0^2\alpha_4 - \alpha_0\alpha_1^2 - 2\alpha_0\alpha_1\alpha_2 + 4\alpha_0\alpha_1\alpha_3 + 4\alpha_0\alpha_1\alpha_4 - \alpha_0\alpha_2^2 + 4\alpha_0\alpha_2\alpha_3 + 4\alpha_0\alpha_2\alpha_4 - \alpha_0\alpha_3^2 - 2\alpha_0\alpha_3\alpha_4 - \alpha_0\alpha_4^2$$
$$- \alpha_1^3 - 3\alpha_1^2\alpha_2 + 2\alpha_1^2\alpha_3 + 2\alpha_1^2\alpha_4 - 3\alpha_1\alpha_2^2 + 4\alpha_1\alpha_2\alpha_3 + 4\alpha_1\alpha_2\alpha_4 - \alpha_1\alpha_3^2 - 2\alpha_1\alpha_3\alpha_4 - \alpha_1\alpha_4^2 - \alpha_2^3 + 2\alpha_2^2\alpha_3 + 2\alpha_2^2\alpha_4$$
$$- \alpha_2\alpha_3^2 - 2\alpha_2\alpha_3\alpha_4 - \alpha_2\alpha_4^2)$$

20 r0Andc0Compact

$$= \begin{bmatrix} 1 & 1 & -1 & 0 \\ -1 & -1 & 0 & -1 \\ 0 & 0 & 1 & 1 \end{bmatrix}$$
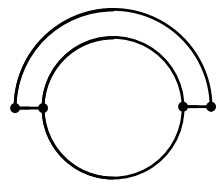
$$\Psi = \alpha_0 + \alpha_1$$

$$\Psi' = 2\alpha_0$$

$$\Phi = \hat{p}\alpha_0\alpha_1$$

$$\Phi' = \hat{p}\alpha_0^2$$

21 r1TOr6Andc1TOc3Compact

$$= \begin{bmatrix} 1 & 1 & 0 & 0 & 0 & -1 & 0 \\ -1 & 0 & -1 & 0 & 0 & 0 & -1 \\ 0 & -1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & -1 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$$
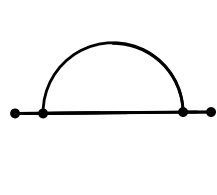
$$\Psi = \alpha_0\alpha_3 + \alpha_0\alpha_4 + \alpha_1\alpha_3 + \alpha_1\alpha_4 + \alpha_2\alpha_3 + \alpha_2\alpha_4 + \alpha_3\alpha_4$$

$$\Psi' = -\left(-\alpha_0 + \alpha_1 + \alpha_2\right)\left(3\alpha_0 + \alpha_1 + \alpha_2\right)$$

$$\Phi = \hat{p}\alpha_0\left(\alpha_1\alpha_3 + \alpha_1\alpha_4 + \alpha_2\alpha_3 + \alpha_2\alpha_4 + \alpha_3\alpha_4\right)$$

$$\Phi' = -\hat{p}\alpha_0\left(-\alpha_0 + \alpha_1 + \alpha_2\right)\left(\alpha_0 + \alpha_1 + \alpha_2\right)$$

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$$= \begin{bmatrix} 1 & 0 & 1 & 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -1 & -1 & 0 & -1 \\ -1 & -1 & 0 & 1 & 0 & 0 & 0 \\ 0 & 1 & -1 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}$$

$$\Psi = \alpha_0\alpha_1 + \alpha_0\alpha_3 + \alpha_0\alpha_4 + \alpha_1\alpha_2 + \alpha_1\alpha_3 + \alpha_1\alpha_4 + \alpha_2\alpha_3 + \alpha_2\alpha_4$$

$$\Psi' = 4\alpha_0\alpha_1 + 4\alpha_0\alpha_3 - \alpha_1^2$$

$$\Phi = \hat{p}\left(\alpha_0\alpha_1\alpha_2 + \alpha_0\alpha_1\alpha_4 + \alpha_0\alpha_2\alpha_3 + \alpha_0\alpha_2\alpha_4 + \alpha_0\alpha_3\alpha_4 + \alpha_1\alpha_2\alpha_3 + \alpha_1\alpha_3\alpha_4 + \alpha_2\alpha_3\alpha_4\right)$$

$$\Phi' = \hat{p}\left(2\alpha_0^2\alpha_1 + 2\alpha_0^2\alpha_3 - \alpha_0\alpha_1^2 + 2\alpha_0\alpha_1\alpha_3 + 2\alpha_0\alpha_3^2 - \alpha_1^2\alpha_3\right)$$