A COMPLETE LIST OF g-VECTORS FOR $\mathcal{M}_4$

We recall that $\mathcal{M}_4 = \mathbb{F}Q/I$ is given by

$$Q: \quad 1 \underset{\beta_1}{\overset{\alpha_1}{\rightleftarrows}} 2 \underset{\beta_2}{\overset{\alpha_2}{\rightleftarrows}} 3$$

with the vertex 4 connected to 2 by β_3 (upward) and α_3 (downward).

with

$$I: \left\langle \begin{array}{c} \alpha_1\beta_1, \beta_3\alpha_3, \alpha_1\alpha_2, \beta_2\beta_1, \\ \alpha_1\alpha_3\beta_3, \alpha_3\beta_3\beta_1, \beta_1\alpha_1 - \alpha_2\beta_2 \end{array} \right\rangle.$$

Then, the complete list of g-vectors for $\mathcal{M}_4$ is as follows.

(1)
$$\begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

(2)
$$\begin{pmatrix} -1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -1 \end{pmatrix}$$

(3)
$$\begin{pmatrix} 0 & 1 & 0 & -1 \\ 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{pmatrix}$$

(4)
$$\begin{pmatrix} 0 & 1 & -1 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

(5)
$$\begin{pmatrix} 1 & -1 & 1 & 1 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

$$(6) \quad \begin{pmatrix} -1 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

$$(7) \quad \begin{pmatrix} 0 & 1 & -1 & 0 \\ 0 & 1 & 0 & -1 \\ 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \end{pmatrix}$$

$$(8) \quad \begin{pmatrix} 1 & 0 & 1 & -1 \\ 0 & 1 & 0 & -1 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{pmatrix}$$

$$(9) \quad \begin{pmatrix} -1 & 1 & 0 & 0 \\ 0 & 1 & 0 & -1 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{pmatrix}$$

$$(10) \quad \begin{pmatrix} 0 & 0 & -1 & 1 \\ 0 & 1 & -1 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

$$(11) \quad \begin{pmatrix} -1 & 1 & 0 & 0 \\ 0 & 1 & -1 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

$$(12) \quad \begin{pmatrix} 1 & -1 & 2 & 0 \\ 1 & -1 & 1 & 1 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{pmatrix}$$

$$(13) \quad \begin{pmatrix} 1 & -1 & 0 & 1 \\ 1 & -1 & 1 & 1 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

(14) $\begin{pmatrix} 0 & -1 & 1 & 1 \\ 1 & -1 & 1 & 1 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$

(15) $\begin{pmatrix} -1 & 0 & 0 & 1 \\ -1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$

(16) $\begin{pmatrix} 0 & 1 & -1 & 0 \\ 0 & 1 & 0 & -1 \\ 1 & 0 & 0 & 0 \\ 0 & 1 & -1 & -1 \end{pmatrix}$

(17) $\begin{pmatrix} -1 & 1 & 0 & 0 \\ 0 & 1 & -1 & 0 \\ 0 & 1 & 0 & -1 \\ 0 & 1 & 0 & 0 \end{pmatrix}$

(18) $\begin{pmatrix} 1 & 0 & 1 & -1 \\ 0 & 1 & 0 & -1 \\ 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & -1 \end{pmatrix}$

(19) $\begin{pmatrix} 1 & 0 & 1 & -1 \\ 0 & 1 & 0 & -1 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & -1 \end{pmatrix}$

(20) $\begin{pmatrix} 1 & -1 & 2 & 0 \\ 1 & 0 & 1 & -1 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{pmatrix}$

(21) $\begin{pmatrix} -1 & 1 & 0 & 0 \\ 0 & 1 & 0 & -1 \\ 0 & 0 & 1 & 0 \\ -1 & 1 & 0 & -1 \end{pmatrix}$

(22) $\begin{pmatrix} 0 & 1 & -2 & 0 \\ 0 & 0 & -1 & 1 \\ 0 & 1 & -1 & 0 \\ 1 & 0 & 0 & 0 \end{pmatrix}$

(23) $\begin{pmatrix} -1 & 1 & -1 & 1 \\ 0 & 0 & -1 & 1 \\ 0 & 1 & -1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$

(24) $\begin{pmatrix} 1 & -1 & 0 & 1 \\ 0 & 0 & -1 & 1 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$

(25) $\begin{pmatrix} -1 & 1 & -1 & 1 \\ -1 & 1 & 0 & 0 \\ 0 & 1 & -1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$

(26) $\begin{pmatrix} 1 & -1 & 1 & 0 \\ 1 & -1 & 2 & 0 \\ 1 & -1 & 1 & 1 \\ 1 & 0 & 0 & 0 \end{pmatrix}$

(27) $\begin{pmatrix} 0 & -1 & 1 & 1 \\ 1 & -1 & 2 & 0 \\ 1 & -1 & 1 & 1 \\ 0 & 0 & 1 & 0 \end{pmatrix}$

(28) $\begin{pmatrix} 1 & -1 & 1 & 0 \\ 1 & -1 & 0 & 1 \\ 1 & -1 & 1 & 1 \\ 1 & 0 & 0 & 0 \end{pmatrix}$

(29) $\begin{pmatrix} 0 & -1 & 1 & 1 \\ 1 & -1 & 0 & 1 \\ 1 & -1 & 1 & 1 \\ 0 & 0 & 0 & 1 \end{pmatrix}$

(30)
$$\begin{pmatrix} -1 & 0 & 0 & 1 \\ 0 & -1 & 1 & 1 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

(31)
$$\begin{pmatrix} 0 & 0 & 1 & 0 \\ -1 & 1 & 0 & 0 \\ -1 & 0 & 0 & 1 \\ -1 & 0 & 0 & 0 \end{pmatrix}$$

(32)
$$\begin{pmatrix} -1 & 1 & -1 & 1 \\ -1 & 0 & 0 & 1 \\ -1 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

(33)
$$\begin{pmatrix} -1 & 2 & -1 & -1 \\ 0 & 1 & -1 & 0 \\ 0 & 1 & 0 & -1 \\ 0 & 1 & -1 & -1 \end{pmatrix}$$

(34)
$$\begin{pmatrix} 0 & 1 & -2 & 0 \\ 0 & 1 & -1 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 1 & -1 & -1 \end{pmatrix}$$

(35)
$$\begin{pmatrix} 0 & 1 & 0 & -1 \\ 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & -1 \\ 0 & 1 & -1 & -1 \end{pmatrix}$$

(36)
$$\begin{pmatrix} -1 & 2 & -1 & -1 \\ -1 & 1 & 0 & 0 \\ 0 & 1 & -1 & 0 \\ 0 & 1 & 0 & -1 \end{pmatrix}$$

(37)
$$\begin{pmatrix} 1 & 0 & 1 & -1 \\ 0 & 1 & 0 & -1 \\ 0 & 0 & 1 & -1 \\ 1 & 0 & 0 & -1 \end{pmatrix}$$

(38) $\begin{pmatrix} 1 & -1 & 1 & 0 \\ 1 & 0 & 1 & -1 \\ 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & -1 \end{pmatrix}$

(39) $\begin{pmatrix} 1 & -1 & 2 & 0 \\ 1 & 0 & 1 & -1 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & -1 \end{pmatrix}$

(40) $\begin{pmatrix} 0 & 1 & 0 & -1 \\ 0 & 0 & 1 & 0 \\ -1 & 1 & 0 & -1 \\ 0 & 0 & 1 & -1 \end{pmatrix}$

(41) $\begin{pmatrix} 1 & -1 & 1 & 0 \\ 1 & -1 & 2 & 0 \\ 1 & 0 & 1 & -1 \\ 1 & 0 & 0 & 0 \end{pmatrix}$

(42) $\begin{pmatrix} -1 & 2 & -1 & -1 \\ -1 & 1 & 0 & 0 \\ 0 & 1 & 0 & -1 \\ -1 & 1 & 0 & -1 \end{pmatrix}$

(43) $\begin{pmatrix} 0 & 0 & 1 & 0 \\ -1 & 1 & 0 & 0 \\ -1 & 1 & 0 & -1 \\ -1 & 0 & 0 & 0 \end{pmatrix}$

(44) $\begin{pmatrix} -1 & 1 & -1 & 0 \\ 0 & 1 & -2 & 0 \\ 0 & 0 & -1 & 1 \\ 0 & 1 & -1 & 0 \end{pmatrix}$

(45) $\begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 1 \\ 0 & 1 & -2 & 0 \\ 0 & 0 & -1 & 0 \end{pmatrix}$

$$(46) \quad \begin{pmatrix} -1 & 1 & -1 & 0 \\ -1 & 1 & -1 & 1 \\ 0 & 0 & -1 & 1 \\ 0 & 1 & -1 & 0 \end{pmatrix}$$

$$(47) \quad \begin{pmatrix} -1 & 0 & 0 & 1 \\ -1 & 1 & -1 & 1 \\ 0 & 0 & -1 & 1 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

$$(48) \quad \begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 1 \\ 1 & -1 & 0 & 1 \\ 0 & 0 & -1 & 0 \end{pmatrix}$$

$$(49) \quad \begin{pmatrix} 0 & -1 & 0 & 2 \\ 1 & -1 & 0 & 1 \\ 0 & 0 & -1 & 1 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

$$(50) \quad \begin{pmatrix} -1 & 1 & -1 & 0 \\ -1 & 1 & -1 & 1 \\ -1 & 1 & 0 & 0 \\ 0 & 1 & -1 & 0 \end{pmatrix}$$

$$(51) \quad \begin{pmatrix} 0 & -1 & 1 & 1 \\ 1 & -1 & 1 & 0 \\ 1 & -1 & 2 & 0 \\ 1 & -1 & 1 & 1 \end{pmatrix}$$

$$(52) \quad \begin{pmatrix} 0 & -1 & 2 & 0 \\ 0 & -1 & 1 & 1 \\ 1 & -1 & 2 & 0 \\ 0 & 0 & 1 & 0 \end{pmatrix}$$

$$(53) \quad \begin{pmatrix} 0 & -1 & 1 & 1 \\ 1 & -1 & 1 & 0 \\ 1 & -1 & 0 & 1 \\ 1 & -1 & 1 & 1 \end{pmatrix}$$

(54) $\begin{pmatrix} 1 & -1 & 1 & 0 \\ 1 & -1 & 0 & 1 \\ 1 & 0 & 0 & 0 \\ 1 & -1 & 0 & 0 \end{pmatrix}$

(55) $\begin{pmatrix} 0 & -1 & 0 & 2 \\ 0 & -1 & 1 & 1 \\ 1 & -1 & 0 & 1 \\ 0 & 0 & 0 & 1 \end{pmatrix}$

(56) $\begin{pmatrix} 0 & 0 & 1 & 0 \\ 0 & -1 & 1 & 1 \\ -1 & 0 & 0 & 1 \\ -1 & 0 & 0 & 0 \end{pmatrix}$

(57) $\begin{pmatrix} 0 & -1 & 0 & 2 \\ -1 & 0 & 0 & 1 \\ 0 & -1 & 1 & 1 \\ 0 & 0 & 0 & 1 \end{pmatrix}$

(58) $\begin{pmatrix} -1 & 1 & -1 & 0 \\ -1 & 1 & 0 & 0 \\ -1 & 0 & 0 & 1 \\ -1 & 0 & 0 & 0 \end{pmatrix}$

(59) $\begin{pmatrix} -1 & 1 & -1 & 0 \\ -1 & 1 & -1 & 1 \\ -1 & 0 & 0 & 1 \\ -1 & 1 & 0 & 0 \end{pmatrix}$

(60) $\begin{pmatrix} -1 & 1 & -1 & 0 \\ -1 & 2 & -1 & -1 \\ 0 & 1 & -1 & 0 \\ 0 & 1 & -1 & -1 \end{pmatrix}$

(61) $\begin{pmatrix} -1 & 2 & -1 & -1 \\ 0 & 1 & 0 & -1 \\ -1 & 1 & 0 & -1 \\ 0 & 1 & -1 & -1 \end{pmatrix}$

$$(62) \quad \begin{pmatrix} -1 & 1 & -1 & 0 \\ 0 & 1 & -2 & 0 \\ 0 & 1 & -1 & 0 \\ 0 & 1 & -1 & -1 \end{pmatrix}$$

$$(63) \quad \begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & -2 & 0 \\ 0 & 1 & -1 & -1 \\ 0 & 0 & -1 & 0 \end{pmatrix}$$

$$(64) \quad \begin{pmatrix} 0 & 1 & 0 & -1 \\ 0 & 1 & 0 & -2 \\ 1 & 0 & 0 & -1 \\ 0 & 1 & -1 & -1 \end{pmatrix}$$

$$(65) \quad \begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & -1 & -1 \\ 1 & 0 & 0 & -1 \\ 0 & 0 & -1 & 0 \end{pmatrix}$$

$$(66) \quad \begin{pmatrix} -1 & 1 & -1 & 0 \\ -1 & 2 & -1 & -1 \\ -1 & 1 & 0 & 0 \\ 0 & 1 & -1 & 0 \end{pmatrix}$$

$$(67) \quad \begin{pmatrix} 1 & -1 & 1 & 0 \\ 1 & 0 & 1 & -1 \\ 0 & 0 & 1 & -1 \\ 1 & 0 & 0 & -1 \end{pmatrix}$$

$$(68) \quad \begin{pmatrix} 0 & 1 & 0 & -1 \\ 0 & 1 & 0 & -2 \\ 0 & 0 & 1 & -1 \\ 1 & 0 & 0 & -1 \end{pmatrix}$$

$$(69) \quad \begin{pmatrix} 1 & -1 & 1 & 0 \\ 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & -1 \\ 1 & -1 & 0 & 0 \end{pmatrix}$$

(70) $\begin{pmatrix} 1 & -1 & 1 & 0 \\ 1 & -1 & 2 & 0 \\ 1 & 0 & 1 & -1 \\ 0 & 0 & 1 & -1 \end{pmatrix}$

(71) $\begin{pmatrix} 0 & -1 & 2 & 0 \\ 1 & -1 & 2 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & -1 \end{pmatrix}$

(72) $\begin{pmatrix} 0 & 1 & 0 & -1 \\ 0 & 1 & 0 & -2 \\ -1 & 1 & 0 & -1 \\ 0 & 0 & 1 & -1 \end{pmatrix}$

(73) $\begin{pmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & -1 \\ -1 & 1 & 0 & -1 \\ -1 & 0 & 0 & 0 \end{pmatrix}$

(74) $\begin{pmatrix} -1 & 1 & -1 & 0 \\ -1 & 2 & -1 & -1 \\ -1 & 1 & 0 & 0 \\ -1 & 1 & 0 & -1 \end{pmatrix}$

(75) $\begin{pmatrix} -1 & 1 & -1 & 0 \\ -1 & 1 & 0 & 0 \\ -1 & 1 & 0 & -1 \\ -1 & 0 & 0 & 0 \end{pmatrix}$

(76) $\begin{pmatrix} -1 & 1 & -2 & 0 \\ -1 & 1 & -1 & 0 \\ 0 & 1 & -2 & 0 \\ 0 & 0 & -1 & 1 \end{pmatrix}$

(77) $\begin{pmatrix} -1 & 1 & -2 & 0 \\ 0 & 0 & -1 & 1 \\ 0 & 1 & -2 & 0 \\ 0 & 0 & -1 & 0 \end{pmatrix}$

$$(78) \quad \begin{pmatrix} -1 & 0 & 0 & 1 \\ -1 & 1 & -1 & 0 \\ -1 & 1 & -1 & 1 \\ 0 & 0 & -1 & 1 \end{pmatrix}$$

$$(79) \quad \begin{pmatrix} 0 & -1 & 0 & 2 \\ -1 & 0 & 0 & 1 \\ 0 & 0 & -1 & 1 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

$$(80) \quad \begin{pmatrix} 1 & 0 & 0 & 0 \\ 1 & -1 & 0 & 1 \\ 1 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \end{pmatrix}$$

$$(81) \quad \begin{pmatrix} 0 & -1 & 0 & 1 \\ 0 & 0 & -1 & 1 \\ 1 & -1 & 0 & 1 \\ 0 & 0 & -1 & 0 \end{pmatrix}$$

$$(82) \quad \begin{pmatrix} 0 & -1 & 0 & 1 \\ 0 & -1 & 0 & 2 \\ 1 & -1 & 0 & 1 \\ 0 & 0 & -1 & 1 \end{pmatrix}$$

$$(83) \quad \begin{pmatrix} 0 & -1 & 2 & 0 \\ 0 & -1 & 1 & 1 \\ 1 & -1 & 1 & 0 \\ 1 & -1 & 2 & 0 \end{pmatrix}$$

$$(84) \quad \begin{pmatrix} 0 & 0 & 1 & 0 \\ 0 & -1 & 1 & 1 \\ 0 & -1 & 2 & 0 \\ -1 & 0 & 0 & 0 \end{pmatrix}$$

$$(85) \quad \begin{pmatrix} 1 & -2 & 1 & 1 \\ 0 & -1 & 1 & 1 \\ 1 & -1 & 1 & 0 \\ 1 & -1 & 0 & 1 \end{pmatrix}$$

$$(86) \quad \begin{pmatrix} 1 & -2 & 1 & 1 \\ 1 & -1 & 1 & 0 \\ 1 & -1 & 0 & 1 \\ 1 & -1 & 0 & 0 \end{pmatrix}$$

$$(87) \quad \begin{pmatrix} 0 & -1 & 0 & 1 \\ 0 & -1 & 0 & 2 \\ 0 & -1 & 1 & 1 \\ 1 & -1 & 0 & 1 \end{pmatrix}$$

$$(88) \quad \begin{pmatrix} 0 & -1 & 0 & 1 \\ 0 & -1 & 1 & 1 \\ -1 & 0 & 0 & 1 \\ -1 & 0 & 0 & 0 \end{pmatrix}$$

$$(89) \quad \begin{pmatrix} 0 & -1 & 0 & 1 \\ 0 & -1 & 0 & 2 \\ -1 & 0 & 0 & 1 \\ 0 & -1 & 1 & 1 \end{pmatrix}$$

$$(90) \quad \begin{pmatrix} -1 & 0 & -1 & 1 \\ -1 & 1 & -1 & 0 \\ -1 & 0 & 0 & 1 \\ -1 & 0 & 0 & 0 \end{pmatrix}$$

$$(91) \quad \begin{pmatrix} -1 & 1 & -1 & 0 \\ -1 & 2 & -1 & -1 \\ -1 & 1 & 0 & -1 \\ 0 & 1 & -1 & -1 \end{pmatrix}$$

$$(92) \quad \begin{pmatrix} 0 & 1 & 0 & -1 \\ 0 & 1 & 0 & -2 \\ -1 & 1 & 0 & -1 \\ 0 & 1 & -1 & -1 \end{pmatrix}$$

$$(93) \quad \begin{pmatrix} -1 & 1 & -2 & 0 \\ -1 & 1 & -1 & 0 \\ 0 & 1 & -2 & 0 \\ 0 & 1 & -1 & -1 \end{pmatrix}$$

(94)
$$\begin{pmatrix} -1 & 1 & -2 & 0 \\ 0 & 1 & -2 & 0 \\ 0 & 1 & -1 & -1 \\ 0 & 0 & -1 & 0 \end{pmatrix}$$

(95)
$$\begin{pmatrix} 0 & 1 & 0 & -2 \\ 0 & 1 & -1 & -1 \\ 1 & 0 & 0 & -1 \\ 0 & 0 & 0 & -1 \end{pmatrix}$$

(96)
$$\begin{pmatrix} 1 & 0 & 0 & -1 \\ 0 & 1 & -1 & -1 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -1 \end{pmatrix}$$

(97)
$$\begin{pmatrix} 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & -1 \\ 1 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \end{pmatrix}$$

(98)
$$\begin{pmatrix} 1 & -1 & 1 & 0 \\ 1 & -1 & 1 & -1 \\ 0 & 0 & 1 & -1 \\ 1 & 0 & 0 & -1 \end{pmatrix}$$

(99)
$$\begin{pmatrix} 0 & 0 & 1 & -1 \\ 0 & 1 & 0 & -2 \\ 1 & 0 & 0 & -1 \\ 0 & 0 & 0 & -1 \end{pmatrix}$$

(100)
$$\begin{pmatrix} 1 & -1 & 1 & 0 \\ 1 & -1 & 1 & -1 \\ 1 & 0 & 0 & -1 \\ 1 & -1 & 0 & 0 \end{pmatrix}$$

(101)
$$\begin{pmatrix} 0 & -1 & 2 & 0 \\ 1 & -1 & 1 & 0 \\ 1 & -1 & 2 & 0 \\ 0 & 0 & 1 & -1 \end{pmatrix}$$

$$(102) \quad \begin{pmatrix} 0 & 0 & 1 & 0 \\ 0 & -1 & 2 & 0 \\ 0 & 0 & 1 & -1 \\ -1 & 0 & 0 & 0 \end{pmatrix}$$

$$(103) \quad \begin{pmatrix} 0 & 0 & 1 & -1 \\ -1 & 1 & 0 & -1 \\ 0 & 1 & 0 & -2 \\ 0 & 0 & 0 & -1 \end{pmatrix}$$

$$(104) \quad \begin{pmatrix} -1 & 1 & 0 & -1 \\ 0 & 0 & 1 & -1 \\ -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & -1 \end{pmatrix}$$

$$(105) \quad \begin{pmatrix} -1 & 1 & -1 & 0 \\ -1 & 1 & 0 & -1 \\ -1 & 1 & -1 & -1 \\ -1 & 0 & 0 & 0 \end{pmatrix}$$

$$(106) \quad \begin{pmatrix} -1 & 0 & -1 & 1 \\ -1 & 1 & -2 & 0 \\ -1 & 1 & -1 & 0 \\ 0 & 0 & -1 & 1 \end{pmatrix}$$

$$(107) \quad \begin{pmatrix} -1 & 0 & -1 & 1 \\ -1 & 1 & -2 & 0 \\ 0 & 0 & -1 & 1 \\ 0 & 0 & -1 & 0 \end{pmatrix}$$

$$(108) \quad \begin{pmatrix} -1 & 0 & -1 & 1 \\ -1 & 0 & 0 & 1 \\ -1 & 1 & -1 & 0 \\ 0 & 0 & -1 & 1 \end{pmatrix}$$

$$(109) \quad \begin{pmatrix} 0 & -1 & 0 & 1 \\ 0 & -1 & 0 & 2 \\ -1 & 0 & 0 & 1 \\ 0 & 0 & -1 & 1 \end{pmatrix}$$

(110) $\begin{pmatrix} 0 & -1 & 0 & 1 \\ 1 & -1 & 0 & 1 \\ 1 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \end{pmatrix}$

(111) $\begin{pmatrix} -1 & 0 & -1 & 1 \\ 0 & -1 & 0 & 1 \\ 0 & 0 & -1 & 1 \\ 0 & 0 & -1 & 0 \end{pmatrix}$

(112) $\begin{pmatrix} 0 & -1 & 2 & 0 \\ 0 & -1 & 1 & 1 \\ 1 & -1 & 1 & 0 \\ 0 & -1 & 1 & 0 \end{pmatrix}$

(113) $\begin{pmatrix} 0 & -1 & 1 & 1 \\ 0 & -1 & 2 & 0 \\ 0 & -1 & 1 & 0 \\ -1 & 0 & 0 & 0 \end{pmatrix}$

(114) $\begin{pmatrix} 1 & -2 & 1 & 1 \\ 0 & -1 & 1 & 1 \\ 1 & -1 & 1 & 0 \\ 0 & -1 & 1 & 0 \end{pmatrix}$

(115) $\begin{pmatrix} 0 & -1 & 0 & 1 \\ 1 & -2 & 1 & 1 \\ 0 & -1 & 1 & 1 \\ 1 & -1 & 0 & 1 \end{pmatrix}$

(116) $\begin{pmatrix} 1 & -2 & 1 & 1 \\ 1 & -1 & 1 & 0 \\ 0 & -1 & 1 & 0 \\ 1 & -1 & 0 & 0 \end{pmatrix}$

(117) $\begin{pmatrix} 0 & -1 & 0 & 1 \\ 1 & -2 & 1 & 1 \\ 1 & -1 & 0 & 1 \\ 1 & -1 & 0 & 0 \end{pmatrix}$

(118) $\begin{pmatrix} 0 & -1 & 0 & 1 \\ 0 & -1 & 1 & 1 \\ 0 & -1 & 1 & 0 \\ -1 & 0 & 0 & 0 \end{pmatrix}$

(119) $\begin{pmatrix} -1 & 0 & -1 & 1 \\ 0 & -1 & 0 & 1 \\ -1 & 0 & 0 & 1 \\ -1 & 0 & 0 & 0 \end{pmatrix}$

(120) $\begin{pmatrix} -1 & 1 & -2 & 0 \\ -1 & 0 & -1 & 1 \\ -1 & 1 & -1 & 0 \\ -1 & 0 & 0 & 0 \end{pmatrix}$

(121) $\begin{pmatrix} -1 & 1 & -1 & 0 \\ -1 & 1 & 0 & -1 \\ -1 & 1 & -1 & -1 \\ 0 & 1 & -1 & -1 \end{pmatrix}$

(122) $\begin{pmatrix} -1 & 1 & 0 & -1 \\ 0 & 1 & 0 & -2 \\ 0 & 1 & -1 & -1 \\ 0 & 0 & 0 & -1 \end{pmatrix}$

(123) $\begin{pmatrix} -1 & 1 & -2 & 0 \\ -1 & 1 & -1 & 0 \\ -1 & 1 & -1 & -1 \\ 0 & 1 & -1 & -1 \end{pmatrix}$

(124) $\begin{pmatrix} -1 & 1 & -2 & 0 \\ -1 & 1 & -1 & -1 \\ 0 & 1 & -1 & -1 \\ 0 & 0 & -1 & 0 \end{pmatrix}$

(125) $\begin{pmatrix} 1 & 0 & 0 & -1 \\ 1 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -1 \end{pmatrix}$

$$(126) \quad \begin{pmatrix} -1 & 1 & -1 & -1 \\ 0 & 1 & -1 & -1 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -1 \end{pmatrix}$$

$$(127) \quad \begin{pmatrix} 0 & 0 & 1 & -1 \\ 1 & -1 & 1 & -1 \\ 1 & 0 & 0 & -1 \\ 0 & 0 & 0 & -1 \end{pmatrix}$$

$$(128) \quad \begin{pmatrix} 1 & -1 & 1 & 0 \\ 0 & -1 & 1 & 0 \\ 1 & -1 & 1 & -1 \\ 0 & 0 & 1 & -1 \end{pmatrix}$$

$$(129) \quad \begin{pmatrix} 1 & -1 & 1 & -1 \\ 1 & 0 & 0 & -1 \\ 1 & -1 & 0 & 0 \\ 0 & 0 & 0 & -1 \end{pmatrix}$$

$$(130) \quad \begin{pmatrix} 1 & -1 & 1 & 0 \\ 0 & -1 & 1 & 0 \\ 1 & -1 & 1 & -1 \\ 1 & -1 & 0 & 0 \end{pmatrix}$$

$$(131) \quad \begin{pmatrix} 0 & -1 & 2 & 0 \\ 1 & -1 & 1 & 0 \\ 0 & -1 & 1 & 0 \\ 0 & 0 & 1 & -1 \end{pmatrix}$$

$$(132) \quad \begin{pmatrix} 0 & -1 & 2 & 0 \\ 0 & -1 & 1 & 0 \\ 0 & 0 & 1 & -1 \\ -1 & 0 & 0 & 0 \end{pmatrix}$$

$$(133) \quad \begin{pmatrix} -1 & 1 & 0 & -1 \\ -1 & 1 & -1 & -1 \\ -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & -1 \end{pmatrix}$$

(134) $\begin{pmatrix} 0 & -1 & 1 & 0 \\ 0 & 0 & 1 & -1 \\ -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & -1 \end{pmatrix}$

(135) $\begin{pmatrix} -1 & 1 & -2 & 0 \\ -1 & 1 & -1 & 0 \\ -1 & 1 & -1 & -1 \\ -1 & 0 & 0 & 0 \end{pmatrix}$

(136) $\begin{pmatrix} -1 & 1 & -2 & 0 \\ -1 & 0 & -1 & 1 \\ -1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 \end{pmatrix}$

(137) $\begin{pmatrix} 0 & -1 & 0 & 1 \\ -1 & 0 & -1 & 1 \\ -1 & 0 & 0 & 1 \\ 0 & 0 & -1 & 1 \end{pmatrix}$

(138) $\begin{pmatrix} 0 & -1 & 0 & 1 \\ 1 & -1 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \end{pmatrix}$

(139) $\begin{pmatrix} 0 & -1 & 0 & 1 \\ -1 & 0 & -1 & 1 \\ -1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 \end{pmatrix}$

(140) $\begin{pmatrix} 0 & -1 & 0 & 1 \\ 1 & -2 & 1 & 1 \\ 0 & -1 & 1 & 1 \\ 0 & -1 & 1 & 0 \end{pmatrix}$

(141) $\begin{pmatrix} 0 & -1 & 0 & 1 \\ 1 & -2 & 1 & 1 \\ 0 & -1 & 1 & 0 \\ 1 & -1 & 0 & 0 \end{pmatrix}$

$$(142) \quad \begin{pmatrix} 0 & -1 & 0 & 1 \\ 0 & -1 & 1 & 0 \\ -1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \end{pmatrix}$$

$$(143) \quad \begin{pmatrix} -1 & 1 & 0 & -1 \\ 0 & 1 & -1 & -1 \\ -1 & 1 & -1 & -1 \\ 0 & 0 & 0 & -1 \end{pmatrix}$$

$$(144) \quad \begin{pmatrix} -1 & 1 & -2 & 0 \\ -1 & 1 & -1 & -1 \\ -1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 \end{pmatrix}$$

$$(145) \quad \begin{pmatrix} 1 & -1 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -1 \end{pmatrix}$$

$$(146) \quad \begin{pmatrix} -1 & 1 & -1 & -1 \\ -1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -1 \end{pmatrix}$$

$$(147) \quad \begin{pmatrix} 0 & -1 & 1 & 0 \\ 0 & 0 & 1 & -1 \\ 1 & -1 & 1 & -1 \\ 0 & 0 & 0 & -1 \end{pmatrix}$$

$$(148) \quad \begin{pmatrix} 0 & -1 & 1 & 0 \\ 1 & -1 & 1 & -1 \\ 1 & -1 & 0 & 0 \\ 0 & 0 & 0 & -1 \end{pmatrix}$$

$$(149) \quad \begin{pmatrix} 0 & -1 & 1 & 0 \\ -1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & -1 \end{pmatrix}$$

(150) $\begin{pmatrix} 0 & -1 & 0 & 1 \\ -1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \end{pmatrix}$

(151) $\begin{pmatrix} 0 & -1 & 0 & 1 \\ 0 & -1 & 1 & 0 \\ 1 & -1 & 0 & 0 \\ 0 & -1 & 0 & 0 \end{pmatrix}$

(152) $\begin{pmatrix} 0 & -1 & 1 & 0 \\ 1 & -1 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & -1 \end{pmatrix}$