$$\begin{pmatrix} 1 & 6 & 1 & -4 \\ 0 & -4 & -1 & 3 \\ -1 & 1 & 1 & -1 \\ 0 & 2 & 0 & -1 \end{pmatrix} \cdot \begin{pmatrix} 4 & 2 & 4 & 6 \\ 6 & 3 & 6 & 9 \\ 6 & 3 & 6 & 9 \\ 2 & 1 & 2 & 3 \end{pmatrix} = \begin{pmatrix} 38 & 19 & 38 & 57 \\ -24 & -12 & -24 & -36 \\ 6 & 3 & 6 & 9 \\ 10 & 5 & 10 & 15 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 6 & 1 & -4 \\ 0 & -4 & -1 & 3 \\ -1 & 1 & 1 & -1 \\ 0 & 2 & 0 & -1 \end{pmatrix} \cdot -4 = \begin{pmatrix} -4 & -24 & -4 & 16 \\ 0 & 16 & 4 & -12 \\ 4 & -4 & -4 & 4 \\ 0 & -8 & 0 & 4 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 6 & 1 & -4 \\ 0 & -4 & -1 & 3 \\ -1 & 1 & 1 & -1 \\ 0 & 2 & 0 & -1 \end{pmatrix} + \begin{pmatrix} 4 & 2 & 4 & 6 \\ 6 & 3 & 6 & 9 \\ 6 & 3 & 6 & 9 \\ 2 & 1 & 2 & 3 \end{pmatrix} = \begin{pmatrix} 5 & 8 & 5 & 2 \\ 6 & -1 & 5 & 12 \\ 5 & 4 & 7 & 8 \\ 2 & 3 & 2 & 2 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 6 & 1 & -4 & 1 & 0 & 0 & 0 \\ 0 & -4 & -1 & 3 & 0 & 1 & 0 & 0 \\ -1 & 1 & 1 & -1 & 0 & 0 & 1 & 0 \\ 0 & 2 & 0 & -1 & 0 & 0 & 0 & 1 \end{pmatrix}$$

$$= \begin{bmatrix} W_1 \\ W_2 \\ W_3 + W_1 \\ W_4 \end{bmatrix} \begin{pmatrix} 1 & 6 & 1 & -4 & 1 & 0 & 0 & 0 \\ 0 & -4 & -1 & 3 & 0 & 1 & 0 & 0 \\ 0 & 7 & 2 & -5 & 1 & 0 & 1 & 0 \\ 0 & 2 & 0 & -1 & 0 & 0 & 0 & 1 \end{pmatrix}$$

$$= \begin{bmatrix} W_1 - 3W_4 \\ 1/2W_4 \\ W_3 + -7/2W_4 \\ 2W_4 + W_2 \end{bmatrix} \begin{pmatrix} 1 & 0 & 1 & -1 & 1 & 0 & 0 & -3 \\ 0 & 1 & 0 & -1/2 & 0 & 0 & 0 & 1/2 \\ 0 & 0 & 2 & -3/2 & 1 & 0 & 1 & 0 & 2 \end{pmatrix}$$

$$= \begin{bmatrix} W_1 + W_4 \\ 2W_4 + W_2 \\ -W_4 \\ 2W_4 + W_3 \end{pmatrix} \begin{pmatrix} 1 & 0 & 0 & 0 & 1 & 1 & 0 & -1 \\ 0 & 1 & 0 & -1/2 & 0 & 0 & 0 & 1/2 \\ 0 & 0 & 1 & -1 & 0 & 0 & 0 & 1/2 \\ 0 & 0 & 1 & -1 & 0 & -1 & 0 & -2 \\ 2W_4 + W_3 & 0 & 0 & 0 & 1/2 & 1 & 1 & 0 & -1 \\ 0 & 1 & 0 & 0 & 1 & 2 & 1 & 1 \\ 0 & 0 & 1 & 0 & 0 & 1 & 2 & 1 & 1 \\ 0 & 0 & 1 & 0 & 0 & 1 & 2 & 1 & 1 \\ 2W_4 + W_3 & 0 & 0 & 0 & 1 & 2 & 3 & 2 & -1 \\ 2W_4 + W_3 & 0 & 0 & 0 & 1 & 2 & 4 & 2 & 1 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 6 & 1 & -4 & 1 & 0 & 0 & 0 \\ 0 & -4 & -1 & 3 & 0 & 1 & 0 & 0 \\ -1 & 1 & 1 & -1 & 0 & 0 & 1 & 0 \\ 0 & 2 & 0 & -1 & 0 & 0 & 0 & 1 \end{pmatrix}$$

$$= \frac{W_1}{W_3 + W_1} \begin{pmatrix} 1 & 6 & 1 & -4 & 1 & 0 & 0 & 0 \\ 0 & -4 & -1 & 3 & 0 & 1 & 0 & 0 \\ 0 & 7 & 2 & -5 & 1 & 0 & 1 & 0 \\ 0 & 2 & 0 & -1 & 0 & 0 & 0 & 1 \end{pmatrix}$$

$$= \frac{W_1 - 3W_4}{W_3 + V_1} \begin{pmatrix} 1 & 0 & 1 & -1 & 1 & 0 & 0 & -3 \\ 0 & 1 & 0 & -1/2 & 0 & 0 & 0 & 1/2 \\ 0 & 0 & 2 & -3/2 & 1 & 0 & 1 & -7/2 \\ 2W_4 + W_2 & 0 & 0 & -1 & 1 & 0 & 1 & 0 & 2 \end{pmatrix}$$

$$= \frac{W_1 + W_4}{2W_4 + W_2} \begin{pmatrix} 1 & 0 & 0 & 0 & 1 & 1 & 1 & 0 & -1 \\ 0 & 1 & 0 & -1/2 & 0 & 0 & 0 & 1/2 \\ 0 & 0 & -1 & 1 & 0 & 1 & 0 & 2 \end{pmatrix}$$

$$= \frac{W_2 + W_4}{2W_4 + W_3} \begin{pmatrix} 1 & 0 & 0 & 0 & 1 & 1 & 1 & 0 & -1 \\ 0 & 1 & 0 & -1/2 & 0 & 0 & 0 & 1/2 \\ 0 & 0 & 1 & -1 & 0 & -1 & 0 & -2 \\ 0 & 0 & 0 & 1/2 & 1 & 2 & 1 & 1/2 \end{pmatrix}$$

$$= \frac{W_1}{2W_4 + W_3} \begin{pmatrix} 1 & 0 & 0 & 0 & 1 & 1 & 1 & 0 & -1 \\ 0 & 1 & 0 & 0 & 1 & 2 & 1 & 1 \\ 0 & 0 & 1 & 0 & 1 & 2 & 1 & 1 \\ 0 & 0 & 1 & 0 & 2 & 3 & 2 & -1 \\ 0 & 0 & 0 & 1 & 2 & 4 & 2 & 1 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 6 & 1 & -4 \\ 0 & -4 & -1 & 3 \\ -1 & 1 & 1 & -1 \\ 0 & 2 & 0 & -1 \end{pmatrix} \cdot \begin{pmatrix} -1 & -1 & 0 & 1 \\ -1 & -2 & -1 & -1 \\ -2 & -3 & -2 & 1 \\ -2 & -4 & -2 & -1 \end{pmatrix} = \begin{pmatrix} -1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -1 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 6 & 1 & -4 & 4 & 2 & 4 & 6 \\ 0 & -4 & -1 & 3 & 6 & 3 & 6 & 9 \\ -1 & 1 & 1 & -1 & 6 & 3 & 6 & 9 \\ 0 & 2 & 0 & -1 & 2 & 1 & 2 & 3 \end{pmatrix}$$

$$= \begin{array}{c} W_1 \\ W_2 \\ W_3 + W_1 \\ W_4 \end{array} \begin{pmatrix} 1 & 6 & 1 & -4 & 4 & 2 & 4 & 6 \\ 0 & -4 & -1 & 3 & 6 & 3 & 6 & 9 \\ 0 & 7 & 2 & -5 & 10 & 5 & 10 & 15 \\ 0 & 2 & 0 & -1 & 2 & 1 & 2 & 3 \end{pmatrix}$$

$$= \begin{array}{c} W_1 - 3W_4 \\ 1/2W_4 \\ W_3 + -7/2W_4 \\ 2W_4 + W_2 \end{array} \begin{pmatrix} 1 & 0 & 1 & -1 & -2 & -1 & -2 & -3 \\ 0 & 1 & 0 & -1/2 & 1 & 1/2 & 1 & 3/2 \\ 0 & 0 & 2 & -3/2 & 3 & 3/2 & 3 & 9/2 \\ 0 & 0 & -1 & 1 & 10 & 5 & 10 & 15 \end{pmatrix}$$

$$= \begin{array}{c} W_1 + W_4 \\ W_2 \\ -W_4 \\ 2W_4 + W_3 \end{array} \begin{pmatrix} 1 & 0 & 0 & 0 & 8 & 4 & 8 & 12 \\ 0 & 0 & 1 & -1 & 1/2 & 1 & 3/2 \\ 0 & 0 & 1 & -1 & 1/2 & 1 & 3/2 \\ -10 & -5 & -10 & -15 \\ 23 & 23/2 & 23 & 69/2 \end{pmatrix}$$

$$= \begin{array}{c} W_1 \\ W_2 + W_4 \\ 2W_4 + W_3 \\ 2W_4 + W_3 \\ 2W_4 \end{array} \begin{pmatrix} 1 & 0 & 0 & 0 & 8 & 4 & 8 & 12 \\ 0 & 1 & 0 & 0 & 24 & 12 & 24 & 36 \\ 0 & 0 & 1 & 0 & 36 & 18 & 36 & 54 \\ 0 & 0 & 0 & 1 & 46 & 23 & 46 & 69 \end{pmatrix}$$