$$\left(\begin{array}{ccc|ccc} 1 & 0 & -2 & 1 & 0 & 0 \\ -2 & 1 & 3 & 0 & 1 & 0 \\ -1 & -1 & 0 & 0 & 0 & 1 \end{array}\right)$$

$R3 = R2 - 2(R3)$

$2(R3) = -2 \quad -2 \quad 0 \mid 0 \quad 0 \quad 2$

$$\begin{array}{ccc|ccc} -2 & 1 & 3 & 0 & 1 & 0 \\ -(-2 & -2 & 0) & -(0 & 0 & 2) \\ \hline 0 & 3 & 3 & 0 & 1 & -2 \end{array}$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & -2 & 1 & 0 & 0 \\ -2 & 1 & 3 & 0 & 1 & 0 \\ 0 & 3 & 3 & 0 & 1 & -2 \end{array}\right)$$

$R3 = 3(R2) - R3$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & -2 & 1 & 0 & 0 \\ -2 & 1 & 3 & 0 & 1 & 0 \\ 0 & 0 & 6 & 0 & 2 & 0 \end{array}\right)$$

$R3 = R3/6$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & -2 & 1 & 0 & 0 \\ -2 & 1 & 3 & 0 & 1 & 0 \\ 0 & 0 & 1 & 0 & 1/3 & 0 \end{array}\right)$$

$R2 = 2(R1) + R2$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & -2 & 1 & 0 & 0 \\ 0 & 1 & -1 & 2 & 1 & 0 \\ 0 & 0 & 1 & 1 & 1/3 & 0 \end{array}\right)$$

$R1 = 2(R3) + R1$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0 & 3 & 2/3 & 0 \\ 0 & 1 & -1 & 2 & 1 & 0 \\ 0 & 0 & 1 & 1 & 1/3 & 0 \end{array}\right)$$

$$R2 = R2 + R3$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0 & 3 & 2/3 & 0 \\ 0 & 1 & 0 & 3 & 4/3 & 0 \\ 0 & 0 & 1 & 1 & 1/3 & 0 \end{array}\right)$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & -2 & 1 & 0 & 0 \\ -2 & 1 & 3 & 0 & 1 & 0 \\ -1 & -1 & 0 & 0 & 0 & 1 \end{array}\right)$$

$R3 = R2 - 2(R3)$

$2(R3) = -2 \quad -2 \quad 0 \mid 0 \quad 0 \quad 2$

$$\begin{array}{r} -2 \quad 1 \quad 3 \\ -(-2 \quad -2 \quad 0) \\ \hline 0 \quad 3 \quad 3 \end{array} \qquad \begin{array}{r} 0 \quad 1 \quad 0 \\ -(0 \quad 0 \quad 2) \\ \hline 0 \quad 1 \quad -2 \end{array}$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & -2 & 1 & 0 & 0 \\ -2 & 1 & 3 & 0 & 1 & 0 \\ 0 & 3 & 3 & 0 & 1 & -2 \end{array}\right)$$

$R2 = 2(R1) + R2$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & -2 & 1 & 0 & 0 \\ 0 & 1 & -1 & 2 & 1 & 0 \\ 0 & 3 & 3 & 0 & 1 & -2 \end{array}\right)$$

$$R3 = R3/3$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & -2 & 1 & 0 & 0 \\ 0 & 1 & -1 & 2 & 1 & 0 \\ 0 & 1 & 1 & 0 & 1/3 & -2/3 \end{array}\right)$$

$$R1 = 2(R3) + R1$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 0 & 1 & 2/3 & -4/3 \\ 0 & 1 & -1 & 2 & 1 & 0 \\ 0 & 1 & 1 & 0 & 1/3 & -2/3 \end{array}\right)$$

$$R3 = R3 - R2$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 0 & 1 & 2/3 & 1/3 \\ 0 & 1 & -1 & 2 & 1 & 0 \\ 0 & 0 & 2 & -2 & -2/3 & -2/3 \end{array}\right)$$

$$R3 = R3/2$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 0 & 1 & 2/3 & 1/3 \\ 0 & 1 & -1 & 2 & 1 & 0 \\ 0 & 0 & 1 & -1 & -1/3 & -1/3 \end{array}\right)$$

$R2 = R2 + R3$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 0 & 1 & 2/3 & 1/3 \\ 0 & 1 & 0 & 1 & 2/3 & -1/3 \\ 0 & 0 & 1 & -1 & -1/3 & -1/3 \end{array}\right)$$

$R1 = R1 - 2(R2)$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0 & -1 & -2/3 & -2/3 \\ 0 & 1 & 0 & 1 & 2/3 & -1/3 \\ 0 & 0 & 1 & -1 & -1/3 & -1/3 \end{array}\right)$$

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