$$\begin{array}{rcrcrcrcl} 4x_1 & + & 3x_2 & + & 3x_3 & - & 2x_4 & = & \lambda \\ -x_1 & - & x_2 & - & x_3 & + & x_4 & = & 2 \\ -19x_1 & - & 19x_2 & - & 20x_3 & + & (11+\mu)x_4 & = & 6-2\lambda \\ 4x_1 & + & 7x_2 & + & 8x_3 & + & x_4 & = & -2 \end{array}$$

$$\begin{array}{c} 3 \\ \\ -20 \\ 8 \end{array} \left(\begin{array}{cccc|c} 4 & 3 & 3 & -2 & \lambda \\ -1 & -1 & -1 & 1 & 2 \\ -19 & -19 & -20 & 11+\mu & 6-2\lambda \\ 4 & 7 & 8 & 1 & -2 \end{array}\right)$$

$$\rightarrow \begin{array}{c} -1 \\ 1 \\ \\ \end{array} \left(\begin{array}{cccc|c} 1 & 0 & 0 & 1 & \lambda+6 \\ -1 & -1 & -1 & 1 & 2 \\ 1 & 1 & 0 & \mu-9 & -2\lambda-34 \\ -4 & -1 & 0 & 9 & 14 \end{array}\right)$$

$$\rightarrow \begin{array}{c} -3 \\ 3 \\ 4 \\ \end{array} \left(\begin{array}{cccc|c} 1 & 0 & 0 & 1 & \lambda+6 \\ 3 & 0 & -1 & -8 & -12 \\ -3 & 0 & 0 & \mu & -2\lambda-20 \\ -4 & -1 & 0 & 9 & 14 \end{array}\right)$$

$$\rightarrow \left(\begin{array}{cccc|c} 1 & 0 & 0 & 1 & \lambda+6 \\ 0 & 0 & -1 & -11 & -3\lambda-30 \\ 0 & 0 & 0 & \mu+3 & \lambda-2 \\ 0 & -1 & 0 & 13 & 4\lambda+38 \end{array}\right) \begin{array}{c} \\ -1 \\ \\ \\ \end{array}$$

$$\rightarrow \left(\begin{array}{cccc|c} 1 & 0 & 0 & 1 & \lambda+6 \\ 0 & 0 & 1 & 11 & 3\lambda+30 \\ 0 & 0 & 0 & \mu+3 & \lambda-2 \\ 0 & -1 & 0 & 13 & 4\lambda+38 \end{array}\right)$$

$$\left|\begin{array}{rcrcrcl} x_1 & + & & x_4 & = & \lambda+6 \\ x_3 & + & & 11x_4 & = & 3\lambda+30 \\ & & & (\mu+3)x_4 & = & \lambda-2 \\ -x_2 & + & & 13x_4 & = & 4\lambda+38 \end{array}\right.$$

I $\mu = -3$

I.1 $\lambda = 2$

$$\left|\begin{array}{rcrcl} x_1 & + & x_4 & = & \lambda+6 \\ x_3 & + & 11x_4 & = & 3\lambda+30 \\ & & 0x_4 & = & 0 \\ -x_2 & + & 13x_4 & = & 4\lambda+38 \end{array}\right.$$

I.2 $\lambda \neq 2$

$$\left|\begin{array}{rcrcl} x_1 & + & x_4 & = & \lambda+6 \\ x_3 & + & 11x_4 & = & 3\lambda+30 \\ & & 0x_4 & = & \lambda-2 \\ -x_2 & + & 13x_4 & = & 4\lambda+38 \end{array}\right.$$

II $\mu \neq -3$

II.1 $\lambda = 2$

$$\left|\begin{array}{rcrcl} x_1 & + & x_4 & = & \lambda+6 \\ x_3 & + & 11x_4 & = & 3\lambda+30 \\ & & (\mu+3)x_4 & = & 0 \\ -x_2 & + & 13x_4 & = & 4\lambda+38 \end{array}\right.$$

$$\rightarrow \left|\begin{array}{rcc} x_1 & = & \lambda+6 \\ x_3 & = & 3\lambda+30 \\ x_4 & = & 0 \\ x_2 & = & -4\lambda-38 \end{array}\right.$$

II.2 $\lambda \neq 2$

$$\left|\begin{array}{rcrcl} x_1 & + & x_4 & = & \lambda+6 \\ x_3 & + & 11x_4 & = & 3\lambda+30 \\ & & (\mu+3)x_4 & = & \lambda-2 \\ -x_2 & + & 13x_4 & = & 4\lambda+38 \end{array}\right.$$

$$\rightarrow \left|\begin{array}{rcrcl} x_1 & + & \frac{\lambda-2}{\mu+3} & = & \lambda+6 \\ x_3 & + & 11\frac{\lambda-2}{\mu+3} & = & 3\lambda+30 \\ & & x_4 & = & \frac{\lambda-2}{\mu+3} \\ -x_2 & + & 13\frac{\lambda-2}{\mu+3} & = & 4\lambda+38 \end{array}\right.$$

$$\rightarrow \left|\begin{array}{rcl} x_1 & = & \frac{(\lambda+6)(\mu+3)-(\lambda-2)}{\mu+3} \\ x_3 & + & \frac{(3\lambda+30)(11\mu+33)-(11\lambda-22)}{11\mu+33} \\ x_4 & = & \frac{\lambda-2}{\mu+3} \\ x_2 & = & -\frac{(4\lambda+38)(13\mu+39)-(13\lambda-26)}{13\mu+39} \end{array}\right.$$

$$\rightarrow \left|\begin{array}{rcl} x_1 & = & \frac{\lambda\mu+2\lambda+6\mu+20}{\mu+3} \\ x_3 & = & \frac{33\mu+88\lambda+330\mu+1012}{11\mu+33} \\ x_4 & = & \frac{\lambda-2}{\mu+3} \\ x_2 & = & -\frac{52\lambda\mu+143\lambda+494\mu+1498}{13\mu+39} \end{array}\right.$$