ex) G.J. (naive)

elimination (Add pivoting for PS3-4)

step

$$\begin{matrix} 1 & 1 & -1 & -3 & \text{—①} \\ 6 & 2 & 2 & 2 & \text{—②} \\ -3 & 4 & 1 & 1 & \text{—③} \end{matrix}$$

② $-\frac{6}{1}\times$① , ③ $-\frac{-3}{1}\times$①

$$\begin{matrix} 1 & 1 & -1 & -3 & \text{—④} \\ 0 & -4 & 8 & 20 & \text{—⑤} \\ 0 & 7 & -2 & -8 & \text{—⑥} \end{matrix}$$

④ $-\frac{1}{-4}\times$⑤ , ⑥ $-\frac{7}{-4}\times$⑤

new!

$$\begin{matrix} 1 & 0 & 1 & 2 & \text{—⑦} \\ 0 & -4 & 8 & 20 & \text{—⑧} \\ 0 & 0 & 12 & 27 & \text{—⑨} \end{matrix}$$

$-1+\frac{1}{4}\cdot 8^{2}$

$-3+\frac{1}{4}\cdot 20^{5}$

⑦ $-\frac{1}{12}\times$⑨ , ⑧ $-\frac{8}{12}\times$⑨

new! new!

$$\begin{matrix} 1 & 0 & 0 & -1/4 & \text{—⑩} \\ 0 & -4 & 0 & 2 & \text{—⑪} \\ 0 & 0 & 12 & 27 & \text{—⑫} \end{matrix}$$

$2-\frac{2^{9}}{12_{4}}\cdot 9 = -\frac{1}{4}$

$20-\frac{2^{8}}{12_{4}}\cdot 27^{9} = 2$

back-substitution

from ⑫

$$12x_3 = 27$$

$$x_3 = \frac{27^{9}}{12_{4}} = 2.25$$

from ⑪

$$-4x_2 = 2$$

$$x_2 = -0.5$$

from ⑩

$$x_1 = -0.25$$