Reporte de operaciones con S.E.L

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Análisis numérico

Reducción gaussiana con sustitución hacia atrás

Resolución del sistema de ecuaciones lineales A

$$A = \begin{aligned} 6.86877e+10\,a_0 + 678686a_1 + 7686a_2 + 7878a_3 + 67a_4 &= 567576 \\ 7a_0 + 678a_1 + 678a_2 + 67867a_3 + 8a_4 &= 567 \\ 6867a_0 + 8678a_1 + 678a_2 + 67a_3 + 68a_4 &= 567 \\ 678a_0 + 678a_1 + 687a_2 + 6786a_3 + 786a_4 &= 5765 \\ 7867a_0 + 86a_1 + 78678a_2 + 678a_3 + 678a_4 &= 675 \end{aligned}$$

Proceso de reducción gaussiana con la matriz aumentada $[\mathbf{A}, \mathbf{B}] = \tilde{\mathbf{A}}^{(1)}$

$$\tilde{A}^{(1)} = \left[\begin{array}{ccccc|c} 6.86877e+10 & 678686 & 7686 & 7878 & 67 & 567576 \\ 7 & 678 & 678 & 67867 & 8 & 567 \\ 6867 & 8678 & 678 & 67 & 68 & 567 \\ 678 & 678 & 687 & 6786 & 786 & 5765 \\ 7867 & 86 & 78678 & 678 & 678 & 675 \end{array}\right]$$

$$\tilde{A}^{(2)} = \left[\begin{array}{ccccc|c} 6.86877e+10 & 678686 & 7686 & 7878 & 67 & 567576 \\ 0 & 678 & 678 & 67867 & 8 & 567 \\ 0 & 8677.93 & 677.999 & 66.9992 & 68 & 566.943 \\ 0 & 677.993 & 687 & 6786 & 786 & 5764.99 \\ 0 & 85.9223 & 78678 & 677.999 & 678 & 674.935 \end{array}\right]$$

$$\begin{aligned} E_2 - (1.01911e-10)\,E_1 &\rightarrow E_2 \\ E_3 - (9.99743e-08)\,E_1 &\rightarrow E_3 \\ E_4 - (9.87077e-09)\,E_1 &\rightarrow E_4 \\ E_5 - (1.14533e-07)\,E_1 &\rightarrow E_5 \end{aligned}$$

$$\tilde{A}^{(3)} = \left[\begin{array}{ccccc|c} 6.86877e+10 & 678686 & 7686 & 7878 & 67 & 567576 \\ 0 & 678 & 678 & 67867 & 8 & 567 \\ 0 & 0 & -7999.93 & -868584 & -34.3945 & -6690.27 \\ 0 & 0 & 9.00655 & -61080.3 & 778 & 5198 \\ 0 & 0 & 78592.1 & -7922.72 & 676.986 & 603.08 \end{array}\right]$$

$$\begin{aligned} E_3 - (12.7993)\,E_2 &\rightarrow E_3 \\ E_4 - (0.99999)\,E_2 &\rightarrow E_4 \\ E_5 - (0.126729)\,E_2 &\rightarrow E_5 \end{aligned}$$

$$\tilde{A}^{(4)} = \left[\begin{array}{ccccc|c} 6.86877e+10 & 678686 & 7686 & 7878 & 67 & 567576 \\ 0 & 678 & 678 & 67867 & 8 & 567 \\ 0 & 0 & -7999.93 & -868584 & -34.3945 & -6690.27 \\ 0 & 0 & 0 & -62058.2 & 777.961 & 5190.47 \\ 0 & 0 & 0 & -8.54097e+06 & 339.091 & -65122.7 \end{array}\right]$$

$$\begin{aligned} E_4 - (-0.00112583)\,E_3 &\rightarrow E_4 \\ E_5 - (-9.82409)\,E_3 &\rightarrow E_5 \end{aligned}$$

$$\tilde{A}^{(5)} = \left[\begin{array}{ccccc|c} 6.86877e+10 & 678686 & 7686 & 7878 & 67 & 567576 \\ 0 & 678 & 678 & 67867 & 8 & 567 \\ 0 & 0 & -7999.93 & -868584 & -34.3945 & -6690.27 \\ 0 & 0 & 0 & -62058.2 & 777.961 & 5190.47 \\ 0 & 0 & 0 & 0 & -106730 & -779478 \end{array}\right]$$

$$E_5 - (137.628)\,E_4 \rightarrow E_5$$

Solución encontrada:

a_0	a_1	a_2	a_3	a_4
8.13971e-06	0.0122957	-0.0544382	0.00791469	7.30324