Algorithm: B := GUSSJORDAN_MRHS_ALT_UNB(A, B)

Partition $U \rightarrow \left(\begin{array}{c|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right), \quad B \rightarrow \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right)$

where A_{TL} is 0×0, B_T has 0 rows

while $m(A_{TL} < m(U)$ **do**

Repartition

$$\left(\begin{array}{c|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right) \rightarrow \left(\begin{array}{c|c|c} A_{00} & A_{01} & A_{02} \\ \hline A_{10}^T & \alpha_{11} & A_{12}^T \\ \hline A_{20} & A_{21} & A_{22} \end{array}\right), \quad \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \rightarrow \left(\begin{array}{c} B_0 \\ \hline b_1 \\ \hline B_2 \end{array}\right)$$

$a_{01} := a_{01}/\alpha_{11}$, $\quad a_{21} := a_{21}/\alpha_{11}$

$A_{02} := A_{02} - a_{01}a_{12}^T$, $\quad A_{22} := A_{22} - a_{21}a_{12}^T$

$B_0 := B_0 - a_{01}b_1^T$, $\quad B_2 := B_2 - a_{21}b_1^T$

$a_{01} := 0$, $\quad a_{21} := 0$

$a_{12}^T := a_{12}^T/\alpha_{11}$ $\quad$ (extra vs Gaussjordan_mrhs)

$b_1^T := b_1^T/\alpha_{11}$

$\alpha_{11} := 0$

Continue with

$$\left(\begin{array}{c|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c|c|c} A_{00} & A_{01} & A_{02} \\ \hline A_{10}^T & \alpha_{11} & A_{12}^T \\ \hline A_{20} & A_{21} & A_{22} \end{array}\right), \quad \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline b_1 \\ \hline B_2 \end{array}\right)$$

endwhile