Volume 3: List of Multi-run Quadratizations

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$$b_1 b_2 b_3 \dots b_k = \min\left(b_1, b_2, b_3, \dots, b_k\right) \tag{1}$$

$$b_1 b_2 b_3 \dots b_k = \min\left(b_1 b_2 \dots b_{k_1}, b_{k_1+1} b_{k_1+2} \dots b_{k_2}, b_{k_2+1} b_{k_2+2} \dots b_{k_3},\right) \tag{2}$$

$$b_1 b_2 b_3 b_4 + b_3 b_4 b_5 b_6 = \min\left(b_2 b_3 + b_3 b_6, b_1 b_4 + b_4 b_5, b_1 b_2 + b_5 b_6 - b_3 - b_4 + 2\right) \tag{3}$$

$$\begin{aligned}
&b_1 b_2 b_3 b_4 + b_5 b_6 b_7 b_8 : && (4)\\
&\quad \longrightarrow\ b_1 b_2 + b_6 b_8 + b_a \left(1 - b_6 + b_7 - b_8\right) && (5)\\
&\quad \longrightarrow\ b_3 b_4 + b_6 b_8 + 2 b_8 b_a && (6)\\
&\quad \longrightarrow\ b_2 b_3 + b_5 b_7 + b_a \left(1 - b_6 + b_7\right) && (7)\\
&\quad \longrightarrow\ b_1 b_4 + b_5 b_7 - b_6 b_8 + b_7 b_a + b_6 && (8)
\end{aligned}$$