

f1 =

$$\begin{aligned} & x_{10}x_{11} + x_{10}x_{12} + x_{11}x_{12} - x_1x_{13} - x_{10}x_{13} + x_{11}x_{13} + x_{12}x_{13} + x_{10}x_{14} - x_{11}x_{14} + x_{12}x_{14} + \\ & x_{13}x_{14} - x_1x_{15} + x_{11}x_{15} - x_{12}x_{15} + x_{13}x_{15} + x_{14}x_{15} + x_1x_{16} - x_{10}x_{16} + x_{12}x_{16} - x_{13}x_{16} + \\ & x_{14}x_{16} + x_{15}x_{16} + x_1x_{17} - x_{10}x_{17} - x_{11}x_{17} + x_{13}x_{17} - x_{14}x_{17} + x_{15}x_{17} + x_{16}x_{17} - x_1x_{18} + \\ & x_{10}x_{18} - x_{11}x_{18} - x_{12}x_{18} + x_{14}x_{18} - x_{15}x_{18} + x_{16}x_{18} + x_{17}x_{18} + x_{11}x_{19} - x_{12}x_{19} - \\ & x_{13}x_{19} + x_{15}x_{19} - x_{16}x_{19} + x_{17}x_{19} + x_{18}x_{19} + x_1x_2 + x_{10}x_2 - x_{14}x_2 - x_{16}x_2 + x_{17}x_2 + \\ & x_{18}x_2 - x_{19}x_2 - x_1x_{20} + x_{12}x_{20} - x_{13}x_{20} - x_{14}x_{20} + x_{16}x_{20} - x_{17}x_{20} + x_{18}x_{20} + x_{19}x_{20} + \\ & x_{13}x_{21} - x_{14}x_{21} - x_{15}x_{21} + x_{17}x_{21} - x_{18}x_{21} + x_{19}x_{21} - x_2x_{21} + x_{20}x_{21} - x_{10}x_{22} + \\ & x_{14}x_{22} - x_{15}x_{22} - x_{16}x_{22} + x_{18}x_{22} - x_{19}x_{22} + x_{20}x_{22} + x_{21}x_{22} - x_{11}x_{23} + x_{15}x_{23} - \\ & x_{16}x_{23} - x_{17}x_{23} + x_{19}x_{23} - x_{20}x_{23} + x_{21}x_{23} + x_{22}x_{23} + x_1x_{24} - x_{10}x_{24} - x_{12}x_{24} + \\ & x_{16}x_{24} - x_{17}x_{24} - x_{18}x_{24} + x_{20}x_{24} - x_{21}x_{24} + x_{22}x_{24} + x_{23}x_{24} - x_1x_{25} + x_{10}x_{25} - \\ & x_{11}x_{25} - x_{13}x_{25} + x_{17}x_{25} - x_{18}x_{25} - x_{19}x_{25} + x_2x_{25} + x_{21}x_{25} - x_{22}x_{25} + x_{23}x_{25} + \\ & x_{24}x_{25} - x_1x_{26} + x_{10}x_{26} + x_{11}x_{26} - x_{12}x_{26} - x_{14}x_{26} + x_{18}x_{26} - x_{19}x_{26} - x_2x_{26} - x_{20}x_{26} + \\ & x_{22}x_{26} - x_{23}x_{26} + x_{24}x_{26} + x_{25}x_{26} - x_{10}x_{27} + x_{11}x_{27} + x_{12}x_{27} - x_{13}x_{27} - x_{15}x_{27} + \\ & x_{19}x_{27} - x_2x_{27} - x_{20}x_{27} - x_{21}x_{27} + x_{23}x_{27} - x_{24}x_{27} + x_{25}x_{27} + x_{26}x_{27} + x_1x_{28} - x_{11}x_{28} + \\ & x_{12}x_{28} + x_{13}x_{28} - x_{14}x_{28} - x_{16}x_{28} + x_{20}x_{28} - x_{21}x_{28} - x_{22}x_{28} + x_{24}x_{28} - x_{25}x_{28} + \\ & x_{26}x_{28} + x_{27}x_{28} - x_1x_{29} - x_{10}x_{29} - x_{12}x_{29} + x_{13}x_{29} + x_{14}x_{29} - x_{15}x_{29} - x_{17}x_{29} + x_2x_{29} + \\ & x_{21}x_{29} - x_{22}x_{29} - x_{23}x_{29} + x_{25}x_{29} - x_{26}x_{29} + x_{27}x_{29} + x_{28}x_{29} + x_1x_3 - x_{10}x_3 + x_{11}x_3 - \\ & x_{15}x_3 - x_{17}x_3 + x_{18}x_3 + x_{19}x_3 + x_2x_3 - x_{20}x_3 - x_{22}x_3 + x_{26}x_3 - x_{27}x_3 - x_{28}x_3 + x_1x_{30} - \\ & x_{11}x_{30} - x_{13}x_{30} + x_{14}x_{30} + x_{15}x_{30} - x_{16}x_{30} - x_{18}x_{30} - x_2x_{30} + x_{22}x_{30} - x_{23}x_{30} - \\ & x_{24}x_{30} + x_{26}x_{30} - x_{27}x_{30} + x_{28}x_{30} + x_{29}x_{30} + x_3x_{30} + x_1x_{31} - x_{12}x_{31} - x_{14}x_{31} + \\ & x_{15}x_{31} + x_{16}x_{31} - x_{17}x_{31} - x_{19}x_{31} + x_2x_{31} + x_{23}x_{31} - x_{24}x_{31} - x_{25}x_{31} + x_{27}x_{31} - \\ & x_{28}x_{31} + x_{29}x_{31} - x_3x_{31} + x_{30}x_{31} - x_1x_4 - x_{10}x_4 - x_{11}x_4 + x_{12}x_4 - x_{16}x_4 - x_{18}x_4 + \\ & x_{19}x_4 + x_2x_4 + x_{20}x_4 - x_{21}x_4 - x_{23}x_4 + x_{27}x_4 - x_{28}x_4 - x_{29}x_4 + x_3x_4 + x_{31}x_4 + x_1x_5 - \\ & x_{11}x_5 - x_{12}x_5 + x_{13}x_5 - x_{17}x_5 - x_{19}x_5 - x_2x_5 + x_{20}x_5 + x_{21}x_5 - x_{22}x_5 - x_{24}x_5 + x_{28}x_5 - \\ & x_{29}x_5 + x_3x_5 - x_{30}x_5 + x_4x_5 + x_{10}x_6 - x_{12}x_6 - x_{13}x_6 + x_{14}x_6 - x_{18}x_6 + x_2x_6 - x_{20}x_6 + \\ & x_{21}x_6 + x_{22}x_6 - x_{23}x_6 - x_{25}x_6 + x_{29}x_6 - x_3x_6 - x_{30}x_6 - x_{31}x_6 + x_4x_6 + x_5x_6 - x_1x_7 - \\ & x_{10}x_7 + x_{11}x_7 - x_{13}x_7 - x_{14}x_7 + x_{15}x_7 - x_{19}x_7 - x_{21}x_7 + x_{22}x_7 + x_{23}x_7 - x_{24}x_7 - x_{26}x_7 + \\ & x_3x_7 + x_{30}x_7 - x_{31}x_7 - x_4x_7 + x_5x_7 + x_6x_7 - x_1x_8 + x_{10}x_8 - x_{11}x_8 + x_{12}x_8 - x_{14}x_8 - \\ & x_{15}x_8 + x_{16}x_8 - x_2x_8 - x_{20}x_8 - x_{22}x_8 + x_{23}x_8 + x_{24}x_8 - x_{25}x_8 - x_{27}x_8 + x_{31}x_8 + x_4x_8 - \\ & x_5x_8 + x_6x_8 + x_7x_8 + x_1x_9 + x_{10}x_9 + x_{11}x_9 - x_{12}x_9 + x_{13}x_9 - x_{15}x_9 - x_{16}x_9 + x_{17}x_9 - \\ & x_2x_9 - x_{21}x_9 - x_{23}x_9 + x_{24}x_9 + x_{25}x_9 - x_{26}x_9 - x_{28}x_9 - x_3x_9 + x_5x_9 - x_6x_9 + x_7x_9 + x_8x_9 \end{aligned}$$

$f_2 =$

$$\begin{aligned}
 & -x_1 x_{10} - x_1 x_{11} - x_1 x_{12} + x_1 x_{13} + x_{10} x_{13} - x_1 x_{14} + x_{11} x_{14} + x_1 x_{15} - x_{10} x_{15} + x_{12} x_{15} + x_{10} x_{16} - \\
 & x_{11} x_{16} + x_{13} x_{16} + x_{10} x_{17} + x_{11} x_{17} - x_{12} x_{17} + x_{14} x_{17} + x_1 x_{18} + x_{11} x_{18} + x_{12} x_{18} - \\
 & x_{13} x_{18} + x_{15} x_{18} - x_1 x_{19} - x_{10} x_{19} + x_{12} x_{19} + x_{13} x_{19} - x_{14} x_{19} + x_{16} x_{19} - x_{11} x_2 - x_{12} x_2 - \\
 & x_{13} x_2 + x_{14} x_2 - x_{15} x_2 + x_{16} x_2 + x_{19} x_2 + x_1 x_{20} - x_{10} x_{20} - x_{11} x_{20} + x_{13} x_{20} + x_{14} x_{20} - \\
 & x_{15} x_{20} + x_{17} x_{20} - x_2 x_{20} - x_1 x_{21} - x_{10} x_{21} - x_{11} x_{21} - x_{12} x_{21} + x_{14} x_{21} + x_{15} x_{21} - x_{16} x_{21} + \\
 & x_{18} x_{21} + x_2 x_{21} - x_1 x_{22} + x_{10} x_{22} - x_{11} x_{22} - x_{12} x_{22} - x_{13} x_{22} + x_{15} x_{22} + x_{16} x_{22} - x_{17} x_{22} + \\
 & x_{19} x_{22} - x_2 x_{22} - x_1 x_{23} - x_{10} x_{23} + x_{11} x_{23} - x_{12} x_{23} - x_{13} x_{23} - x_{14} x_{23} + x_{16} x_{23} + x_{17} x_{23} - \\
 & x_{18} x_{23} - x_2 x_{23} + x_{20} x_{23} + x_{10} x_{24} - x_{11} x_{24} + x_{12} x_{24} - x_{13} x_{24} - x_{14} x_{24} - x_{15} x_{24} + \\
 & x_{17} x_{24} + x_{18} x_{24} - x_{19} x_{24} - x_2 x_{24} + x_{21} x_{24} + x_1 x_{25} + x_{11} x_{25} - x_{12} x_{25} + x_{13} x_{25} - x_{14} x_{25} - \\
 & x_{15} x_{25} - x_{16} x_{25} + x_{18} x_{25} + x_{19} x_{25} - x_{20} x_{25} + x_{22} x_{25} + x_1 x_{26} + x_{12} x_{26} - x_{13} x_{26} + \\
 & x_{14} x_{26} - x_{15} x_{26} - x_{16} x_{26} - x_{17} x_{26} + x_{19} x_{26} + x_2 x_{26} + x_{20} x_{26} - x_{21} x_{26} + x_{23} x_{26} - \\
 & x_1 x_{27} + x_{10} x_{27} + x_{13} x_{27} - x_{14} x_{27} + x_{15} x_{27} - x_{16} x_{27} - x_{17} x_{27} - x_{18} x_{27} + x_2 x_{27} + \\
 & x_{20} x_{27} + x_{21} x_{27} - x_{22} x_{27} + x_{24} x_{27} - x_{10} x_{28} + x_{11} x_{28} + x_{14} x_{28} - x_{15} x_{28} + x_{16} x_{28} - \\
 & x_{17} x_{28} - x_{18} x_{28} - x_{19} x_{28} - x_2 x_{28} + x_{21} x_{28} + x_{22} x_{28} - x_{23} x_{28} + x_{25} x_{28} + x_1 x_{29} + x_{10} x_{29} - \\
 & x_{11} x_{29} + x_{12} x_{29} + x_{15} x_{29} - x_{16} x_{29} + x_{17} x_{29} - x_{18} x_{29} - x_{19} x_{29} - x_{20} x_{29} + x_{22} x_{29} + \\
 & x_{23} x_{29} - x_{24} x_{29} + x_{26} x_{29} + x_{10} x_3 - x_{12} x_3 - x_{13} x_3 - x_{14} x_3 + x_{15} x_3 - x_{16} x_3 + x_{17} x_3 + \\
 & x_{20} x_3 - x_{21} x_3 + x_{22} x_3 - x_{23} x_3 - x_{24} x_3 - x_{25} x_3 + x_{27} x_3 + x_{28} x_3 - x_{29} x_3 - x_{10} x_{30} + \\
 & x_{11} x_{30} - x_{12} x_{30} + x_{13} x_{30} + x_{16} x_{30} - x_{17} x_{30} + x_{18} x_{30} - x_{19} x_{30} + x_2 x_{30} - x_{20} x_{30} - \\
 & x_{21} x_{30} + x_{23} x_{30} + x_{24} x_{30} - x_{25} x_{30} + x_{27} x_{30} - x_{10} x_{31} - x_{11} x_{31} + x_{12} x_{31} - x_{13} x_{31} + \\
 & x_{14} x_{31} + x_{17} x_{31} - x_{18} x_{31} + x_{19} x_{31} - x_{20} x_{31} - x_{21} x_{31} - x_{22} x_{31} + x_{24} x_{31} + x_{25} x_{31} - \\
 & x_{26} x_{31} + x_{28} x_{31} + x_3 x_{31} + x_1 x_4 + x_{10} x_4 + x_{11} x_4 - x_{13} x_4 - x_{14} x_4 - x_{15} x_4 + x_{16} x_4 - \\
 & x_{17} x_4 + x_{18} x_4 + x_{21} x_4 - x_{22} x_4 + x_{23} x_4 - x_{24} x_4 - x_{25} x_4 - x_{26} x_4 + x_{28} x_4 + x_{29} x_4 - x_{30} x_4 - \\
 & x_{10} x_5 + x_{11} x_5 + x_{12} x_5 - x_{14} x_5 - x_{15} x_5 - x_{16} x_5 + x_{17} x_5 - x_{18} x_5 + x_{19} x_5 + x_2 x_5 + x_{22} x_5 - \\
 & x_{23} x_5 + x_{24} x_5 - x_{25} x_5 - x_{26} x_5 - x_{27} x_5 + x_{29} x_5 + x_{30} x_5 - x_{31} x_5 - x_1 x_6 - x_{11} x_6 + x_{12} x_6 + \\
 & x_{13} x_6 - x_{15} x_6 - x_{16} x_6 - x_{17} x_6 + x_{18} x_6 - x_{19} x_6 + x_{20} x_6 + x_{23} x_6 - x_{24} x_6 + x_{25} x_6 - \\
 & x_{26} x_6 - x_{27} x_6 - x_{28} x_6 + x_3 x_6 + x_{30} x_6 + x_{31} x_6 + x_1 x_7 + x_{10} x_7 - x_{12} x_7 + x_{13} x_7 + x_{14} x_7 - \\
 & x_{16} x_7 - x_{17} x_7 - x_{18} x_7 + x_{19} x_7 - x_2 x_7 - x_{20} x_7 + x_{21} x_7 + x_{24} x_7 - x_{25} x_7 + x_{26} x_7 - x_{27} x_7 - \\
 & x_{28} x_7 - x_{29} x_7 + x_{31} x_7 + x_4 x_7 + x_1 x_8 + x_{11} x_8 - x_{13} x_8 + x_{14} x_8 + x_{15} x_8 - x_{17} x_8 - x_{18} x_8 - \\
 & x_{19} x_8 + x_2 x_8 + x_{20} x_8 - x_{21} x_8 + x_{22} x_8 + x_{25} x_8 - x_{26} x_8 + x_{27} x_8 - x_{28} x_8 - x_{29} x_8 - x_3 x_8 - \\
 & x_{30} x_8 + x_5 x_8 + x_{12} x_9 - x_{14} x_9 + x_{15} x_9 + x_{16} x_9 - x_{18} x_9 - x_{19} x_9 + x_2 x_9 - x_{20} x_9 + x_{21} x_9 - \\
 & x_{22} x_9 + x_{23} x_9 + x_{26} x_9 - x_{27} x_9 + x_{28} x_9 - x_{29} x_9 + x_3 x_9 - x_{30} x_9 - x_{31} x_9 - x_4 x_9 + x_6 x_9
 \end{aligned}$$

$f_3 =$

$$\begin{aligned}
 & x_1 x_{10} + x_1 x_{11} - x_{10} x_{11} + x_1 x_{12} - x_{10} x_{12} - x_{11} x_{12} - x_{11} x_{13} - x_{12} x_{13} + x_1 x_{14} - x_{10} x_{14} - \\
 & x_{12} x_{14} - x_{13} x_{14} + x_{10} x_{15} - x_{11} x_{15} - x_{13} x_{15} - x_{14} x_{15} - x_1 x_{16} + x_{11} x_{16} - x_{12} x_{16} - x_{14} x_{16} - \\
 & x_{15} x_{16} - x_1 x_{17} + x_{12} x_{17} - x_{13} x_{17} - x_{15} x_{17} - x_{16} x_{17} - x_{10} x_{18} + x_{13} x_{18} - x_{14} x_{18} - \\
 & x_{16} x_{18} - x_{17} x_{18} + x_1 x_{19} + x_{10} x_{19} - x_{11} x_{19} + x_{14} x_{19} - x_{15} x_{19} - x_{17} x_{19} - x_{18} x_{19} - x_1 x_2 - \\
 & x_{10} x_2 + x_{11} x_2 + x_{12} x_2 + x_{13} x_2 + x_{15} x_2 - x_{17} x_2 - x_{18} x_2 + x_{10} x_{20} + x_{11} x_{20} - x_{12} x_{20} + \\
 & x_{15} x_{20} - x_{16} x_{20} - x_{18} x_{20} - x_{19} x_{20} + x_2 x_{20} + x_1 x_{21} + x_{10} x_{21} + x_{11} x_{21} + x_{12} x_{21} - x_{13} x_{21} + \\
 & x_{16} x_{21} - x_{17} x_{21} - x_{19} x_{21} - x_{20} x_{21} + x_1 x_{22} + x_{11} x_{22} + x_{12} x_{22} + x_{13} x_{22} - x_{14} x_{22} + \\
 & x_{17} x_{22} - x_{18} x_{22} + x_2 x_{22} - x_{20} x_{22} - x_{21} x_{22} + x_1 x_{23} + x_{10} x_{23} + x_{12} x_{23} + x_{13} x_{23} + x_{14} x_{23} - \\
 & x_{15} x_{23} + x_{18} x_{23} - x_{19} x_{23} + x_2 x_{23} - x_{21} x_{23} - x_{22} x_{23} - x_1 x_{24} + x_{11} x_{24} + x_{13} x_{24} + x_{14} x_{24} + \\
 & x_{15} x_{24} - x_{16} x_{24} + x_{19} x_{24} + x_2 x_{24} - x_{20} x_{24} - x_{22} x_{24} - x_{23} x_{24} - x_{10} x_{25} + x_{12} x_{25} + \\
 & x_{14} x_{25} + x_{15} x_{25} + x_{16} x_{25} - x_{17} x_{25} - x_2 x_{25} + x_{20} x_{25} - x_{21} x_{25} - x_{23} x_{25} - x_{24} x_{25} - \\
 & x_{10} x_{26} - x_{11} x_{26} + x_{13} x_{26} + x_{15} x_{26} + x_{16} x_{26} + x_{17} x_{26} - x_{18} x_{26} + x_{21} x_{26} - x_{22} x_{26} - \\
 & x_{24} x_{26} - x_{25} x_{26} + x_1 x_{27} - x_{11} x_{27} - x_{12} x_{27} + x_{14} x_{27} + x_{16} x_{27} + x_{17} x_{27} + x_{18} x_{27} - \\
 & x_{19} x_{27} + x_{22} x_{27} - x_{23} x_{27} - x_{25} x_{27} - x_{26} x_{27} - x_1 x_{28} + x_{10} x_{28} - x_{12} x_{28} - x_{13} x_{28} + \\
 & x_{15} x_{28} + x_{17} x_{28} + x_{18} x_{28} + x_{19} x_{28} + x_2 x_{28} - x_{20} x_{28} + x_{23} x_{28} - x_{24} x_{28} - x_{26} x_{28} - \\
 & x_{27} x_{28} + x_{11} x_{29} - x_{13} x_{29} - x_{14} x_{29} + x_{16} x_{29} + x_{18} x_{29} + x_{19} x_{29} - x_2 x_{29} + x_{20} x_{29} - \\
 & x_{21} x_{29} + x_{24} x_{29} - x_{25} x_{29} - x_{27} x_{29} - x_{28} x_{29} - x_1 x_3 - x_{11} x_3 + x_{12} x_3 + x_{13} x_3 + x_{14} x_3 + \\
 & x_{16} x_3 - x_{18} x_3 - x_{19} x_3 - x_2 x_3 + x_{21} x_3 + x_{23} x_3 + x_{24} x_3 + x_{25} x_3 - x_{26} x_3 + x_{29} x_3 - x_1 x_{30} + \\
 & x_{10} x_{30} + x_{12} x_{30} - x_{14} x_{30} - x_{15} x_{30} + x_{17} x_{30} + x_{19} x_{30} + x_{20} x_{30} + x_{21} x_{30} - x_{22} x_{30} + \\
 & x_{25} x_{30} - x_{26} x_{30} - x_{28} x_{30} - x_{29} x_{30} - x_3 x_{30} - x_1 x_{31} + x_{10} x_{31} + x_{11} x_{31} + x_{13} x_{31} - x_{15} x_{31} - \\
 & x_{16} x_{31} + x_{18} x_{31} - x_2 x_{31} + x_{20} x_{31} + x_{21} x_{31} + x_{22} x_{31} - x_{23} x_{31} + x_{26} x_{31} - x_{27} x_{31} - \\
 & x_{29} x_{31} - x_{30} x_{31} - x_{12} x_4 + x_{13} x_4 + x_{14} x_4 + x_{15} x_4 + x_{17} x_4 - x_{19} x_4 - x_2 x_4 - x_{20} x_4 + x_{22} x_4 + \\
 & x_{24} x_4 + x_{25} x_4 + x_{26} x_4 - x_{27} x_4 - x_3 x_4 + x_{30} x_4 - x_{31} x_4 - x_1 x_5 + x_{10} x_5 - x_{13} x_5 + x_{14} x_5 + \\
 & x_{15} x_5 + x_{16} x_5 + x_{18} x_5 - x_{20} x_5 - x_{21} x_5 + x_{23} x_5 + x_{25} x_5 + x_{26} x_5 + x_{27} x_5 - x_{28} x_5 - x_3 x_5 + \\
 & x_{31} x_5 - x_4 x_5 + x_1 x_6 - x_{10} x_6 + x_{11} x_6 - x_{14} x_6 + x_{15} x_6 + x_{16} x_6 + x_{17} x_6 + x_{19} x_6 - x_2 x_6 - \\
 & x_{21} x_6 - x_{22} x_6 + x_{24} x_6 + x_{26} x_6 + x_{27} x_6 + x_{28} x_6 - x_{29} x_6 - x_4 x_6 - x_5 x_6 - x_{11} x_7 + x_{12} x_7 - \\
 & x_{15} x_7 + x_{16} x_7 + x_{17} x_7 + x_{18} x_7 + x_2 x_7 + x_{20} x_7 - x_{22} x_7 - x_{23} x_7 + x_{25} x_7 + x_{27} x_7 + x_{28} x_7 + \\
 & x_{29} x_7 - x_3 x_7 - x_{30} x_7 - x_5 x_7 - x_6 x_7 - x_{10} x_8 - x_{12} x_8 + x_{13} x_8 - x_{16} x_8 + x_{17} x_8 + x_{18} x_8 + \\
 & x_{19} x_8 + x_{21} x_8 - x_{23} x_8 - x_{24} x_8 + x_{26} x_8 + x_{28} x_8 + x_{29} x_8 + x_3 x_8 + x_{30} x_8 - x_{31} x_8 - x_4 x_8 - \\
 & x_6 x_8 - x_7 x_8 - x_1 x_9 - x_{10} x_9 - x_{11} x_9 - x_{13} x_9 + x_{14} x_9 - x_{17} x_9 + x_{18} x_9 + x_{19} x_9 + x_{20} x_9 + \\
 & x_{22} x_9 - x_{24} x_9 - x_{25} x_9 + x_{27} x_9 + x_{29} x_9 + x_{30} x_9 + x_{31} x_9 + x_4 x_9 - x_5 x_9 - x_7 x_9 - x_8 x_9
 \end{aligned}$$