1 BLT set 5 over GF(47)

Points on the quadric $x_0^2 + x_1x_2 + x_3x_4$:

$P_1 = (0, 1, 0, 0, 0)$

$P_2 = (0, 0, 1, 0, 0)$

$P_3 = (0, 1, 28, 46, 28)$

$P_4 = (0, 1, 7, 23, 14)$

$P_5 = (0, 1, 36, 14, 31)$

$P_6 = (1, 18, 4, 43, 30)$

$P_7 = (1, 11, 5, 30, 42)$

$P_8 = (1, 6, 2, 14, 36)$

$P_9 = (1, 36, 37, 30, 1)$

$P_{10} = (1, 40, 44, 20, 13)$

$P_{11} = (1, 13, 41, 36, 40)$

$P_{12} = (1, 29, 11, 2, 28)$

$P_{13} = (1, 22, 22, 21, 6)$

$P_{14} = (1, 19, 11, 40, 30)$

$P_{15} = (1, 38, 46, 30, 31)$

$P_{16} = (1, 9, 25, 1, 9)$

$P_{17} = (1, 46, 46, 18, 26)$

$P_{18} = (1, 9, 3, 8, 20)$

$P_{19} = (1, 43, 10, 14, 33)$

$P_{20} = (1, 33, 5, 44, 24)$

$P_{21} = (1, 21, 24, 15, 29)$

$P_{22} = (1, 17, 1, 1, 29)$

$P_{23} = (1, 8, 3, 11, 2)$

$P_{24} = (1, 23, 44, 28, 36)$

$P_{25} = (1, 17, 37, 5, 15)$

$P_{26} = (1, 39, 30, 15, 41)$

$P_{27} = (1, 35, 10, 45, 11)$

$P_{28} = (1, 39, 41, 22, 17)$

$P_{29} = (1, 14, 32, 42, 24)$

$P_{30} = (1, 22, 23, 38, 25)$

$P_{31} = (1, 13, 40, 28, 20)$

$P_{32} = (1, 10, 43, 28, 40)$

$P_{33} = (1, 43, 40, 8, 14)$

$P_{34} = (1, 16, 18, 35, 28)$

$P_{35} = (1, 16, 17, 10, 15)$

$P_{36} = (1, 11, 31, 3, 27)$

$P_{37} = (1, 23, 44, 16, 16)$

$P_{38} = (1, 2, 17, 3, 4)$

$P_{39} = (1, 27, 7, 30, 25)$

$P_{40} = (1, 21, 12, 9, 45)$

$P_{41} = (1, 2, 3, 32, 13)$

$P_{42} = (1, 22, 40, 46, 35)$

$P_{43} = (0, 1, 6, 35, 24)$

$P_{44} = (1, 35, 23, 13, 32)$

$P_{45} = (1, 41, 22, 41, 33)$

$P_{46} = (1, 10, 22, 17, 34)$

$P_{47} = (1, 20, 5, 40, 1)$

$P_{48} = (1, 11, 39, 31, 21)$

Stabilizer of order 3 is generated by:

$$g_1 = \begin{pmatrix} 41 & 0 & 25 & 29 & 15 \\ 0 & 0 & 36 & 0 & 0 \\ 1 & 17 & 1 & 1 & 29 \\ 21 & 0 & 10 & 38 & 2 \\ 27 & 0 & 36 & 9 & 13 \end{pmatrix}$$

The induced group has order 3 and is generated by:

g_1 =(1, 2, 22)(3, 28, 24)(4, 17, 23)(5, 45, 40)(6, 36, 48)(7, 12, 27)(8, 13, 44)(9, 46, 25)(10, 16, 41)(11, 39, 21)(14, 29, 33)(15, 32, 38)(18, 43, 30)(19, 26, 42)(20, 34, 37)(31, 47, 35)

group order is small, so we list all elements a_1 =id

a_2 =(1, 2, 22)(3, 28, 24)(4, 17, 23)(5, 45, 40)(6, 36, 48)(7, 12, 27)(8, 13, 44)(9, 46, 25)(10, 16, 41)(11, 39, 21)(14, 29, 33)(15, 32, 38)(18, 43, 30)(19, 26, 42)(20, 34, 37)(31, 47, 35)

a_3 =(1, 22, 2)(3, 24, 28)(4, 23, 17)(5, 40, 45)(6, 48, 36)(7, 27, 12)(8, 44, 13)(9, 25, 46)(10, 41, 16)(11, 21, 39)(14, 33, 29)(15, 38, 32)(18, 30, 43)(19, 42, 26)(20, 37, 34)(31, 35, 47)

and now the elements themselves: $a_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$

$a_2 = \begin{pmatrix} 41 & 0 & 25 & 29 & 15 \\ 0 & 0 & 36 & 0 & 0 \\ 1 & 17 & 1 & 1 & 29 \\ 21 & 0 & 10 & 38 & 2 \\ 27 & 0 & 36 & 9 & 13 \end{pmatrix}$

$a_3 = \begin{pmatrix} 41 & 2 & 0 & 7 & 42 \\ 36 & 1 & 36 & 36 & 10 \\ 0 & 17 & 0 & 0 & 0 \\ 31 & 29 & 0 & 13 & 2 \\ 38 & 1 & 0 & 9 & 38 \end{pmatrix}$

Kernel has order 1 and is generated by:

There are 16 orbits on the BLT set.

The orbit length are $[3^{16}]$

The orbits are:

$O_0 = \{1, 2, 22\}$ (length 3)

$O_1 = \{3, 24, 28\}$ (length 3)

$O_2 = \{4, 17, 23\}$ (length 3)

$O_3 = \{5, 40, 45\}$ (length 3)

$O_4 = \{6, 36, 48\}$ (length 3)

$O_5 = \{7, 12, 27\}$ (length 3)

$O_6 = \{8, 13, 44\}$ (length 3)

$O_7 = \{9, 25, 46\}$ (length 3)

$O_8 = \{10, 16, 41\}$ (length 3)

$O_9 = \{11, 21, 39\}$ (length 3)

$O_{10} = \{14, 29, 33\}$ (length 3)

$O_{11} = \{15, 32, 38\}$ (length 3)

$O_{12} = \{18, 30, 43\}$ (length 3)

$O_{13} = \{19, 26, 42\}$ (length 3)

$O_{14} = \{20, 34, 37\}$ (length 3)

$O_{15} = \{31, 35, 47\}$ (length 3)

The actions induced on the orbits are:

Induced action on orbit $O_0 = \{1, 2, 22\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 2, 3)

group order is small, so we list all elements a_1 =id

a_2 =(1, 2, 3)

a_3 =(1, 3, 2)

and now the elements themselves: $a_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$

$$a_2 = \begin{pmatrix} 41 & 0 & 25 & 29 & 15 \\ 0 & 0 & 36 & 0 & 0 \\ 1 & 17 & 1 & 1 & 29 \\ 21 & 0 & 10 & 38 & 2 \\ 27 & 0 & 36 & 9 & 13 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 41 & 2 & 0 & 7 & 42 \\ 36 & 1 & 36 & 36 & 10 \\ 0 & 17 & 0 & 0 & 0 \\ 31 & 29 & 0 & 13 & 2 \\ 38 & 1 & 0 & 9 & 38 \end{pmatrix}$$

Kernel has order 1 and is generated by:

Induced action on orbit $O_1 = \{3, 24, 28\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 3, 2)

group order is small, so we list all elements a_1 =id

a_2 =(1, 3, 2)

a_3 =(1, 2, 3)

and now the elements themselves: $a_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$

$$a_2 = \begin{pmatrix} 41 & 0 & 25 & 29 & 15 \\ 0 & 0 & 36 & 0 & 0 \\ 1 & 17 & 1 & 1 & 29 \\ 21 & 0 & 10 & 38 & 2 \\ 27 & 0 & 36 & 9 & 13 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 41 & 2 & 0 & 7 & 42 \\ 36 & 1 & 36 & 36 & 10 \\ 0 & 17 & 0 & 0 & 0 \\ 31 & 29 & 0 & 13 & 2 \\ 38 & 1 & 0 & 9 & 38 \end{pmatrix}$$

Kernel has order 1 and is generated by:

Induced action on orbit $O_2 = \{4, 17, 23\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 2, 3)

group order is small, so we list all elements a_1 =id

a_2 =(1, 2, 3)

a_3 =(1, 3, 2)

and now the elements themselves: $a_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$

$$a_2 = \begin{pmatrix} 41 & 0 & 25 & 29 & 15 \\ 0 & 0 & 36 & 0 & 0 \\ 1 & 17 & 1 & 1 & 29 \\ 21 & 0 & 10 & 38 & 2 \\ 27 & 0 & 36 & 9 & 13 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 41 & 2 & 0 & 7 & 42 \\ 36 & 1 & 36 & 36 & 10 \\ 0 & 17 & 0 & 0 & 0 \\ 31 & 29 & 0 & 13 & 2 \\ 38 & 1 & 0 & 9 & 38 \end{pmatrix}$$

Kernel has order 1 and is generated by:

Induced action on orbit $O_3 = \{5, 40, 45\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 3, 2)

group order is small, so we list all elements a_1 =id

a_2 =(1, 3, 2)

a_3 =(1, 2, 3)

and now the elements themselves: $a_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$

$a_2 = \begin{pmatrix} 41 & 0 & 25 & 29 & 15 \\ 0 & 0 & 36 & 0 & 0 \\ 1 & 17 & 1 & 1 & 29 \\ 21 & 0 & 10 & 38 & 2 \\ 27 & 0 & 36 & 9 & 13 \end{pmatrix}$

$a_3 = \begin{pmatrix} 41 & 2 & 0 & 7 & 42 \\ 36 & 1 & 36 & 36 & 10 \\ 0 & 17 & 0 & 0 & 0 \\ 31 & 29 & 0 & 13 & 2 \\ 38 & 1 & 0 & 9 & 38 \end{pmatrix}$

Kernel has order 1 and is generated by:

Induced action on orbit $O_4 = \{6, 36, 48\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 2, 3)

group order is small, so we list all elements a_1 =id

a_2 =(1, 2, 3)

a_3 =(1, 3, 2)

and now the elements themselves: $a_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$

$a_2 = \begin{pmatrix} 41 & 0 & 25 & 29 & 15 \\ 0 & 0 & 36 & 0 & 0 \\ 1 & 17 & 1 & 1 & 29 \\ 21 & 0 & 10 & 38 & 2 \\ 27 & 0 & 36 & 9 & 13 \end{pmatrix}$

$a_3 = \begin{pmatrix} 41 & 2 & 0 & 7 & 42 \\ 36 & 1 & 36 & 36 & 10 \\ 0 & 17 & 0 & 0 & 0 \\ 31 & 29 & 0 & 13 & 2 \\ 38 & 1 & 0 & 9 & 38 \end{pmatrix}$

Kernel has order 1 and is generated by:

Induced action on orbit $O_5 = \{7, 12, 27\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 2, 3)

group order is small, so we list all elements a_1 =id

a_2 =(1, 2, 3)

a_3 =(1, 3, 2)

and now the elements themselves: $a_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$

$a_2 = \begin{pmatrix} 41 & 0 & 25 & 29 & 15 \\ 0 & 0 & 36 & 0 & 0 \\ 1 & 17 & 1 & 1 & 29 \\ 21 & 0 & 10 & 38 & 2 \\ 27 & 0 & 36 & 9 & 13 \end{pmatrix}$

$a_3 = \begin{pmatrix} 41 & 2 & 0 & 7 & 42 \\ 36 & 1 & 36 & 36 & 10 \\ 0 & 17 & 0 & 0 & 0 \\ 31 & 29 & 0 & 13 & 2 \\ 38 & 1 & 0 & 9 & 38 \end{pmatrix}$

Kernel has order 1 and is generated by:

Induced action on orbit $O_6 = \{8, 13, 44\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 2, 3)

group order is small, so we list all elements a_1 =id

a_2 =(1, 2, 3)

a_3 =(1, 3, 2)

and now the elements themselves: $a_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$

$$a_2 = \begin{pmatrix} 41 & 0 & 25 & 29 & 15 \\ 0 & 0 & 36 & 0 & 0 \\ 1 & 17 & 1 & 1 & 29 \\ 21 & 0 & 10 & 38 & 2 \\ 27 & 0 & 36 & 9 & 13 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 41 & 2 & 0 & 7 & 42 \\ 36 & 1 & 36 & 36 & 10 \\ 0 & 17 & 0 & 0 & 0 \\ 31 & 29 & 0 & 13 & 2 \\ 38 & 1 & 0 & 9 & 38 \end{pmatrix}$$

Kernel has order 1 and is generated by:

Induced action on orbit $O_7 = \{9, 25, 46\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 3, 2)

group order is small, so we list all elements a_1 =id

a_2 =(1, 3, 2)

a_3 =(1, 2, 3)

and now the elements themselves: $a_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$

$$a_2 = \begin{pmatrix} 41 & 0 & 25 & 29 & 15 \\ 0 & 0 & 36 & 0 & 0 \\ 1 & 17 & 1 & 1 & 29 \\ 21 & 0 & 10 & 38 & 2 \\ 27 & 0 & 36 & 9 & 13 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 41 & 2 & 0 & 7 & 42 \\ 36 & 1 & 36 & 36 & 10 \\ 0 & 17 & 0 & 0 & 0 \\ 31 & 29 & 0 & 13 & 2 \\ 38 & 1 & 0 & 9 & 38 \end{pmatrix}$$

Kernel has order 1 and is generated by:

Induced action on orbit $O_8 = \{10, 16, 41\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 2, 3)

group order is small, so we list all elements a_1 =id

a_2 =(1, 2, 3)

a_3 =(1, 3, 2)

and now the elements themselves: $a_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$

$$a_2 = \begin{pmatrix} 41 & 0 & 25 & 29 & 15 \\ 0 & 0 & 36 & 0 & 0 \\ 1 & 17 & 1 & 1 & 29 \\ 21 & 0 & 10 & 38 & 2 \\ 27 & 0 & 36 & 9 & 13 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 41 & 2 & 0 & 7 & 42 \\ 36 & 1 & 36 & 36 & 10 \\ 0 & 17 & 0 & 0 & 0 \\ 31 & 29 & 0 & 13 & 2 \\ 38 & 1 & 0 & 9 & 38 \end{pmatrix}$$

Kernel has order 1 and is generated by:

Induced action on orbit $O_9 = \{11, 21, 39\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 3, 2)

group order is small, so we list all elements a_1 =id

a_2 =(1, 3, 2)

a_3 =(1, 2, 3)

and now the elements themselves: $a_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$

$a_2 = \begin{pmatrix} 41 & 0 & 25 & 29 & 15 \\ 0 & 0 & 36 & 0 & 0 \\ 1 & 17 & 1 & 1 & 29 \\ 21 & 0 & 10 & 38 & 2 \\ 27 & 0 & 36 & 9 & 13 \end{pmatrix}$

$a_3 = \begin{pmatrix} 41 & 2 & 0 & 7 & 42 \\ 36 & 1 & 36 & 36 & 10 \\ 0 & 17 & 0 & 0 & 0 \\ 31 & 29 & 0 & 13 & 2 \\ 38 & 1 & 0 & 9 & 38 \end{pmatrix}$

Kernel has order 1 and is generated by:

Induced action on orbit $O_{10} = \{14, 29, 33\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 2, 3)

group order is small, so we list all elements a_1 =id

a_2 =(1, 2, 3)

a_3 =(1, 3, 2)

and now the elements themselves: $a_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$

$a_2 = \begin{pmatrix} 41 & 0 & 25 & 29 & 15 \\ 0 & 0 & 36 & 0 & 0 \\ 1 & 17 & 1 & 1 & 29 \\ 21 & 0 & 10 & 38 & 2 \\ 27 & 0 & 36 & 9 & 13 \end{pmatrix}$

$a_3 = \begin{pmatrix} 41 & 2 & 0 & 7 & 42 \\ 36 & 1 & 36 & 36 & 10 \\ 0 & 17 & 0 & 0 & 0 \\ 31 & 29 & 0 & 13 & 2 \\ 38 & 1 & 0 & 9 & 38 \end{pmatrix}$

Kernel has order 1 and is generated by:

Induced action on orbit $O_{11} = \{15, 32, 38\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 2, 3)

group order is small, so we list all elements a_1 =id

a_2 =(1, 2, 3)

a_3 =(1, 3, 2)

and now the elements themselves: $a_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$

$a_2 = \begin{pmatrix} 41 & 0 & 25 & 29 & 15 \\ 0 & 0 & 36 & 0 & 0 \\ 1 & 17 & 1 & 1 & 29 \\ 21 & 0 & 10 & 38 & 2 \\ 27 & 0 & 36 & 9 & 13 \end{pmatrix}$

$a_3 = \begin{pmatrix} 41 & 2 & 0 & 7 & 42 \\ 36 & 1 & 36 & 36 & 10 \\ 0 & 17 & 0 & 0 & 0 \\ 31 & 29 & 0 & 13 & 2 \\ 38 & 1 & 0 & 9 & 38 \end{pmatrix}$

Kernel has order 1 and is generated by:

Induced action on orbit $O_{12} = \{18, 30, 43\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 3, 2)

group order is small, so we list all elements a_1 =id

a_2 =(1, 3, 2)

a_3 =(1, 2, 3)

and now the elements themselves: $a_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$

$$a_2 = \begin{pmatrix} 41 & 0 & 25 & 29 & 15 \\ 0 & 0 & 36 & 0 & 0 \\ 1 & 17 & 1 & 1 & 29 \\ 21 & 0 & 10 & 38 & 2 \\ 27 & 0 & 36 & 9 & 13 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 41 & 2 & 0 & 7 & 42 \\ 36 & 1 & 36 & 36 & 10 \\ 0 & 17 & 0 & 0 & 0 \\ 31 & 29 & 0 & 13 & 2 \\ 38 & 1 & 0 & 9 & 38 \end{pmatrix}$$

Kernel has order 1 and is generated by:

Induced action on orbit $O_{13} = \{19, 26, 42\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 2, 3)

group order is small, so we list all elements a_1 =id

a_2 =(1, 2, 3)

a_3 =(1, 3, 2)

and now the elements themselves: $a_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$

$$a_2 = \begin{pmatrix} 41 & 0 & 25 & 29 & 15 \\ 0 & 0 & 36 & 0 & 0 \\ 1 & 17 & 1 & 1 & 29 \\ 21 & 0 & 10 & 38 & 2 \\ 27 & 0 & 36 & 9 & 13 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 41 & 2 & 0 & 7 & 42 \\ 36 & 1 & 36 & 36 & 10 \\ 0 & 17 & 0 & 0 & 0 \\ 31 & 29 & 0 & 13 & 2 \\ 38 & 1 & 0 & 9 & 38 \end{pmatrix}$$

Kernel has order 1 and is generated by:

Induced action on orbit $O_{14} = \{20, 34, 37\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 2, 3)

group order is small, so we list all elements a_1 =id

a_2 =(1, 2, 3)

a_3 =(1, 3, 2)

and now the elements themselves: $a_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$

$$a_2 = \begin{pmatrix} 41 & 0 & 25 & 29 & 15 \\ 0 & 0 & 36 & 0 & 0 \\ 1 & 17 & 1 & 1 & 29 \\ 21 & 0 & 10 & 38 & 2 \\ 27 & 0 & 36 & 9 & 13 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 41 & 2 & 0 & 7 & 42 \\ 36 & 1 & 36 & 36 & 10 \\ 0 & 17 & 0 & 0 & 0 \\ 31 & 29 & 0 & 13 & 2 \\ 38 & 1 & 0 & 9 & 38 \end{pmatrix}$$

Kernel has order 1 and is generated by:

Induced action on orbit $O_{15} = \{31, 35, 47\}$ (length 3)

The induced group has order 3 and is generated by:

g_1 =(1, 3, 2)

group order is small, so we list all elements a_1 =id

a_2 =(1, 3, 2)

a_3 =(1, 2, 3)

and now the elements themselves: $a_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$

$a_2 = \begin{pmatrix} 41 & 0 & 25 & 29 & 15 \\ 0 & 0 & 36 & 0 & 0 \\ 1 & 17 & 1 & 1 & 29 \\ 21 & 0 & 10 & 38 & 2 \\ 27 & 0 & 36 & 9 & 13 \end{pmatrix}$

$a_3 = \begin{pmatrix} 41 & 2 & 0 & 7 & 42 \\ 36 & 1 & 36 & 36 & 10 \\ 0 & 17 & 0 & 0 & 0 \\ 31 & 29 & 0 & 13 & 2 \\ 38 & 1 & 0 & 9 & 38 \end{pmatrix}$

Kernel has order 1 and is generated by: