

# Assignment 4

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## Part 1

See Figures 1 and 2 for Cayley graphs of the automorphism groups of Graphs 2 and 3, respectively, with elements enumerated as in the corresponding tables.

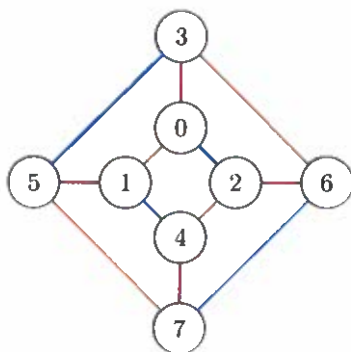


Figure 1: Cayley graph for the automorphism group of Graph 2.

#	Cycle
0	$id$
1	$(2\ 3)(5\ 6)$
2	$(0\ 1)(4\ 7)$
3	$(0\ 2)(1\ 3)(4\ 5)(6\ 7)$
4	$(2\ 3)(5\ 6)(0\ 1)(4\ 7)$
5	$(0\ 2\ 1\ 3)(4\ 5\ 7\ 6)$
6	$(0\ 3\ 1\ 2)(4\ 6\ 7\ 5)$
7	$(0\ 3)(1\ 2)(4\ 6)(5\ 7)$

Table 1: Automorphism group of Graph 2.

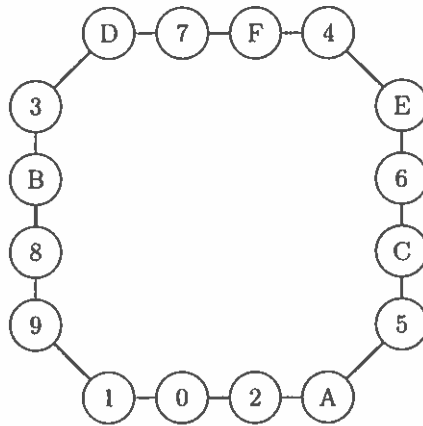


Figure 2: Cayley graph for the automorphism group of Graph 3.

#	Cycle
0	<i>id</i>
1	(1 2)(4 5)(6 7)
2	(0 1)(2 4)(3 6)(5 7)
3	(1 6)(0 5)(4 3)
4	(0 3)(2 6)(1 7)
5	(0 4)(2 7)(5 3)
6	(1 4)(0 7)(2 3)(5 6)
7	(4 7)(1 3)(0 6)(2 5)
8	(7 3)(4 6)(1 5)(0 2)
9	(0 1 4 7 3 6 5 2)
A	(0 2 5 6 3 7 4 1)
B	(0 4 3 5)(1 7 6 2)
C	(0 5 3 4)(2 6 7 1)
D	(0 7 5 1 3 2 4 6)
E	(0 6 4 2 3 1 5 7)
F	(0 3)(1 6)(4 5)(7 2)

Table 2: Automorphism group of Graph 3.

## Part 2

See figures 3 and 4 for drawings of the graphs with the largest automorphism groups in  $(J_4, J_4; 9)$  and  $(J_4, J_5; 12)$ , respectively. See also the included code for an explanation of how these graphs were generated.

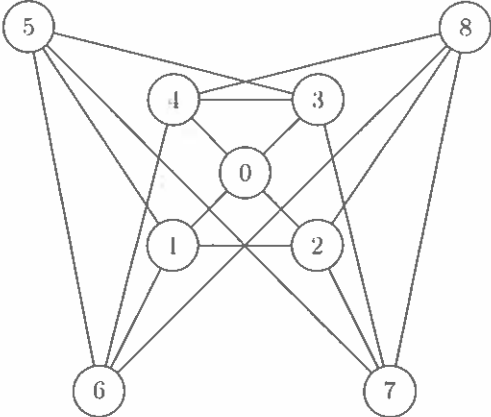


Figure 3: Drawing of the graph in  $(J_4, J_4; 9)$  with the largest automorphism group, of size 72.

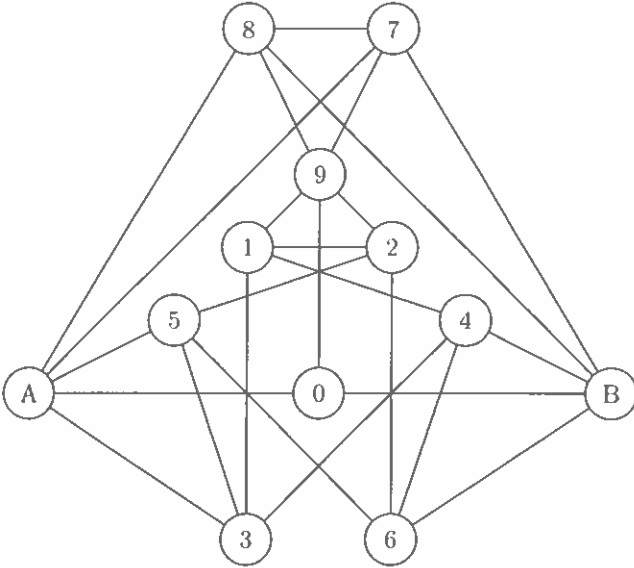


Figure 4: Drawing of the graph in  $(J_4, J_5; 12)$  with the largest automorphism group, of size 24.