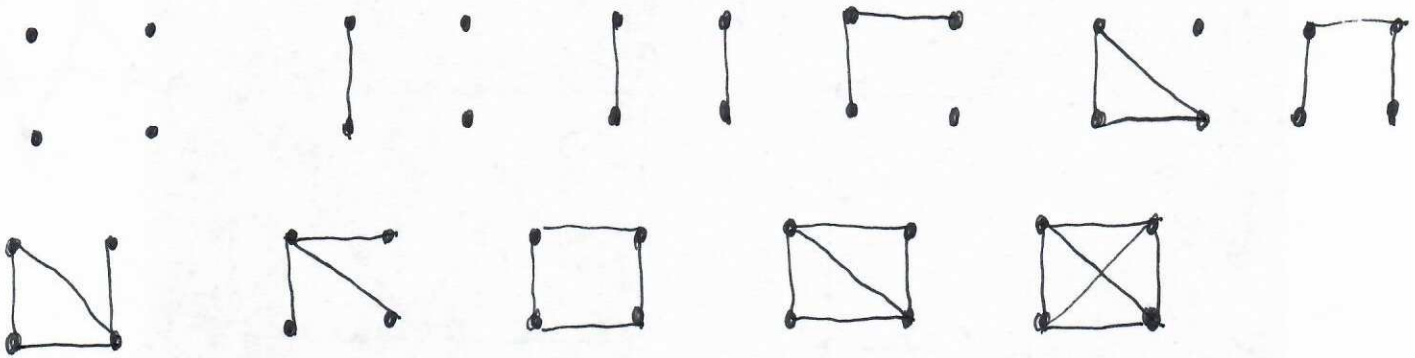
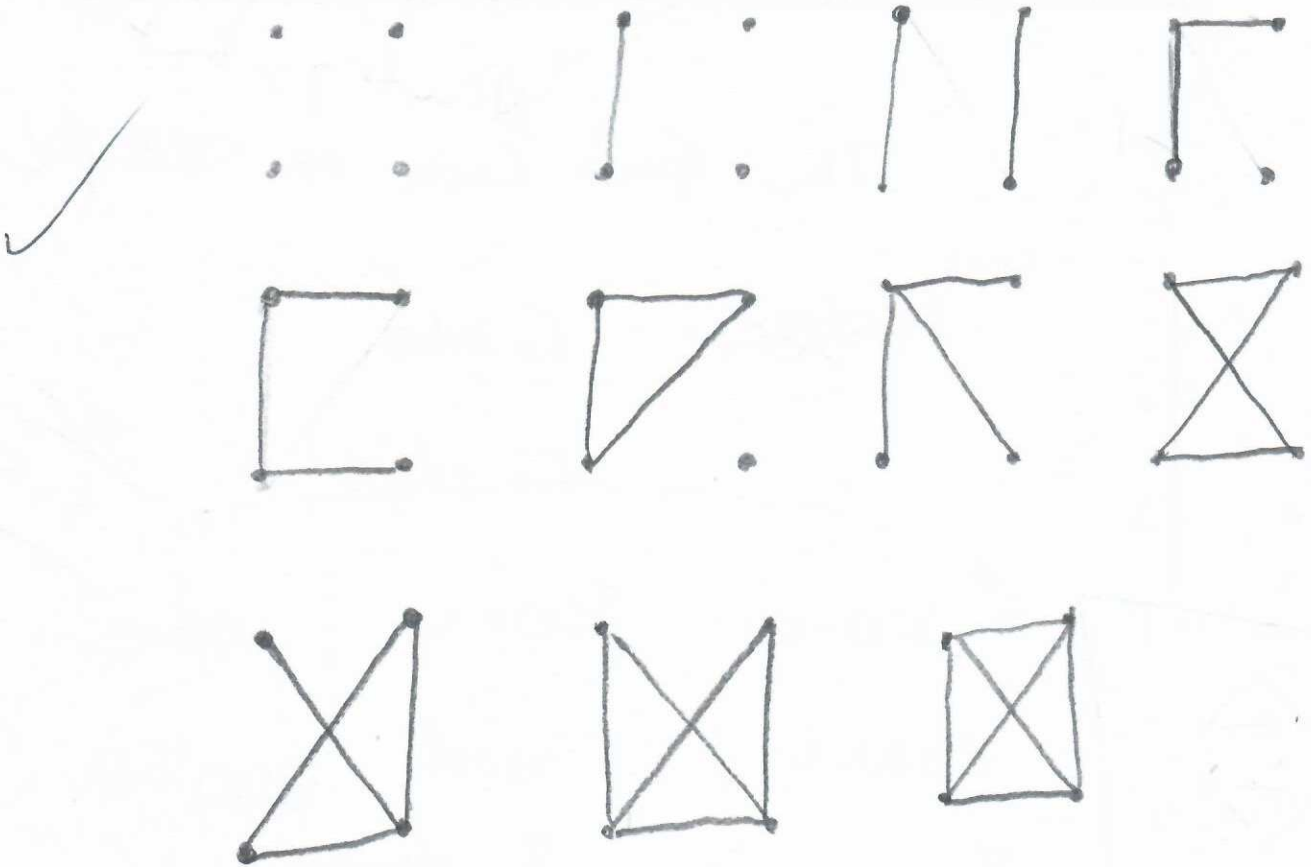
1. (6 pts) Draw all the nonisomorphic simple graphs with four nodes.

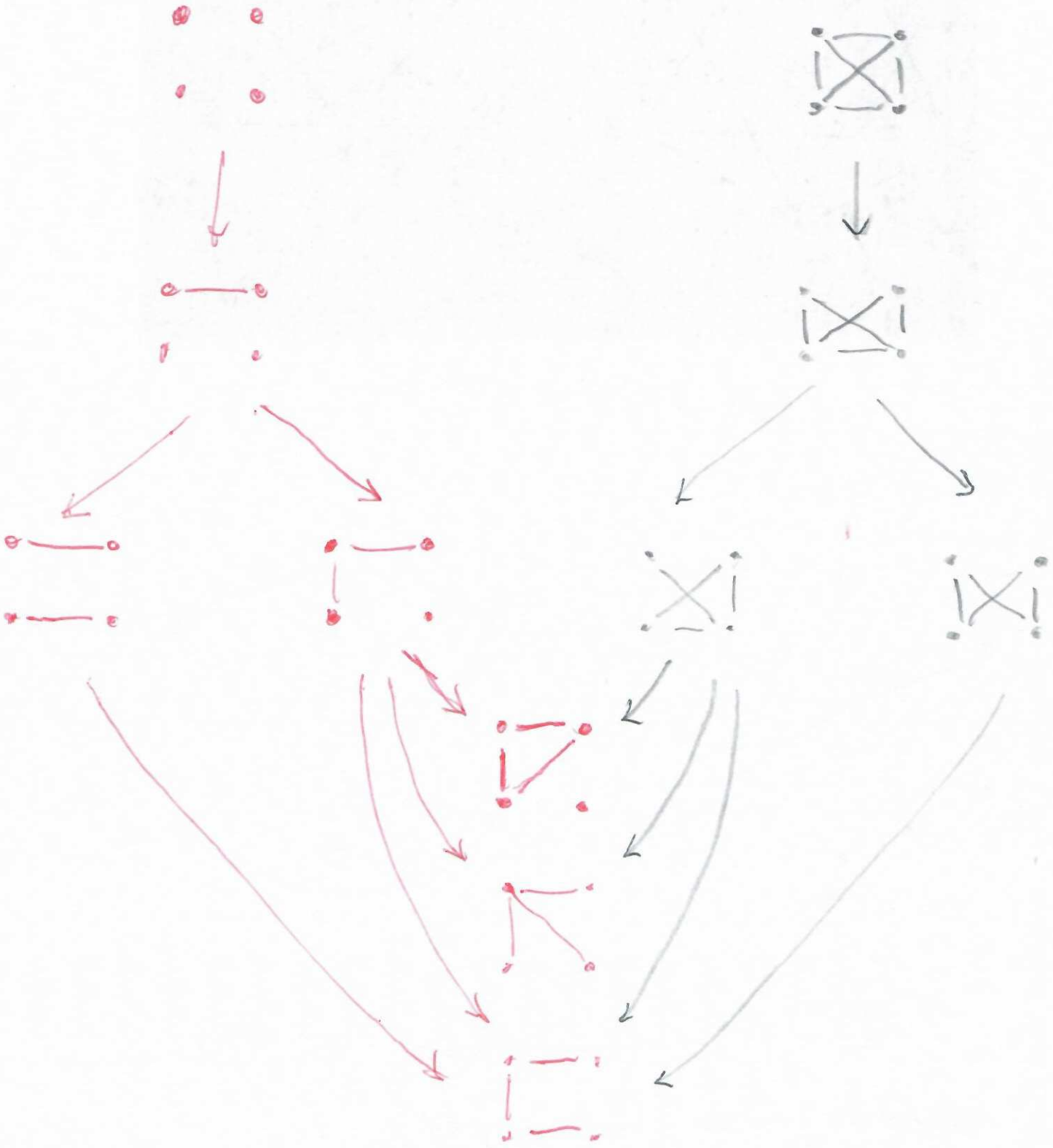




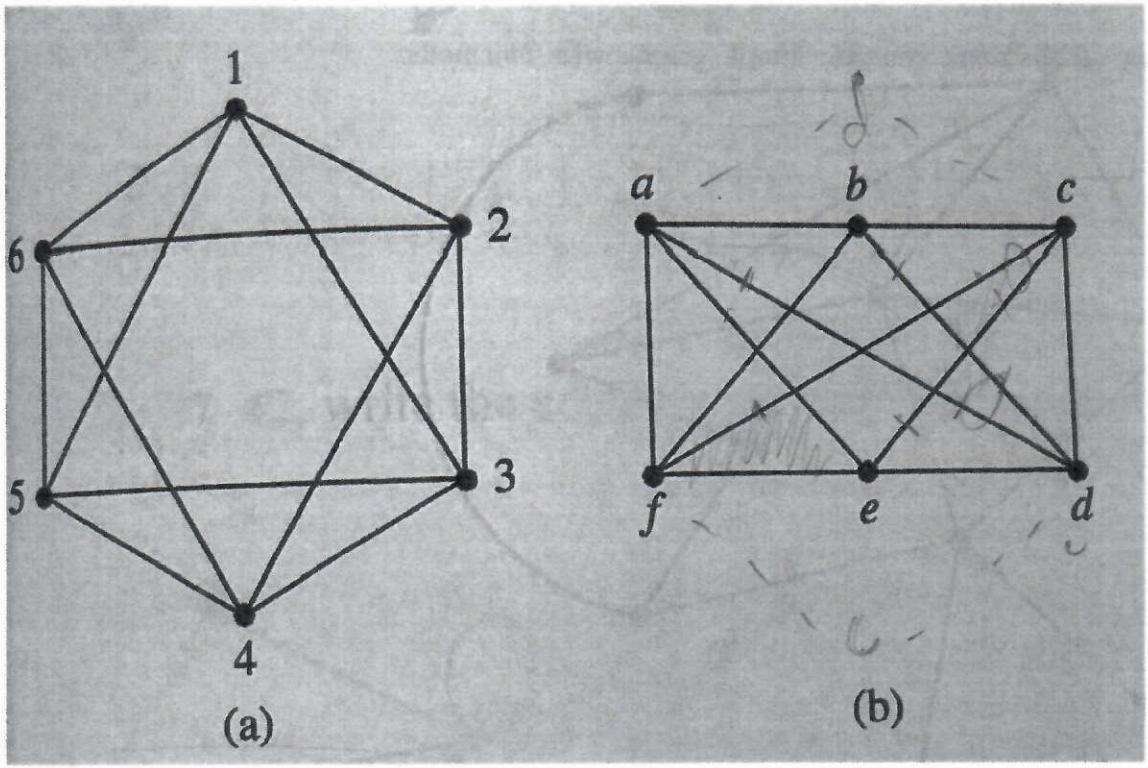
MAT385 Quiz 08, Spring 2023

Name:

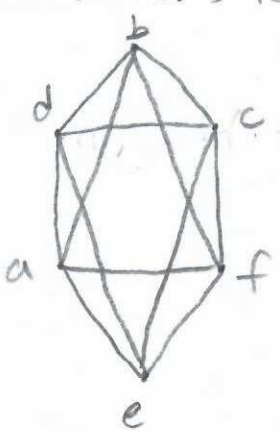
1. (6 pts) Draw all the nonisomorphic simple graphs with four nodes.



2. (4 pts) Decide if the two graphs are isomorphic. If so, give the function or functions that establish the isomorphism; if not, explain why.



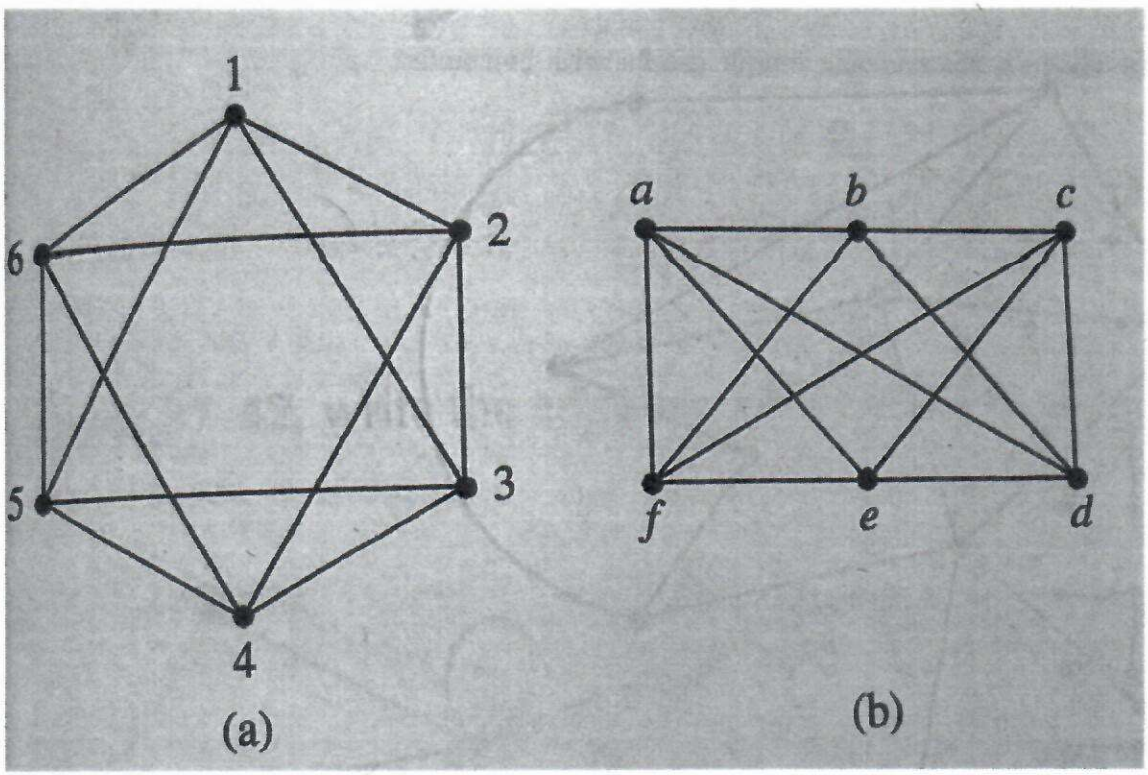
The two graphs are isomorphic, we can redraw b and make it to have the shape (to be similar) to graph A.

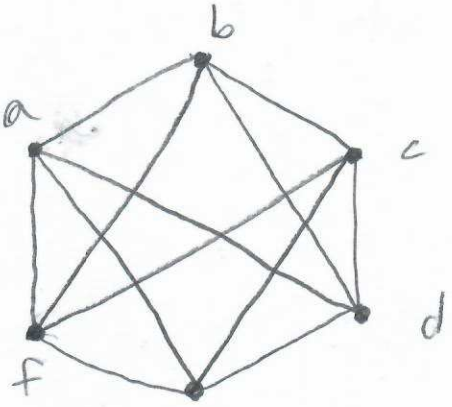


Nice!

f1: 1→b, 6→d, 2→c, 5→a, 4→e, 3→f

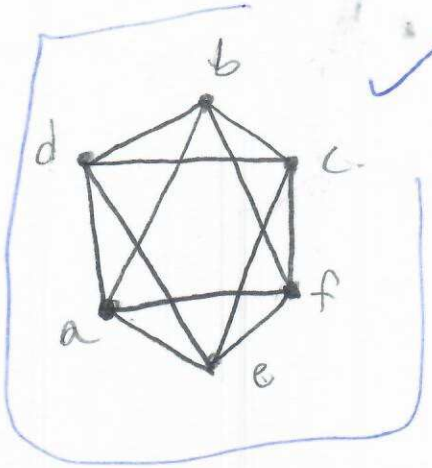
2. (4 pts) Decide if the two graphs are isomorphic. If so, give the function or functions that establish the isomorphism; if not, explain why.





The two graphs are isomorphic.

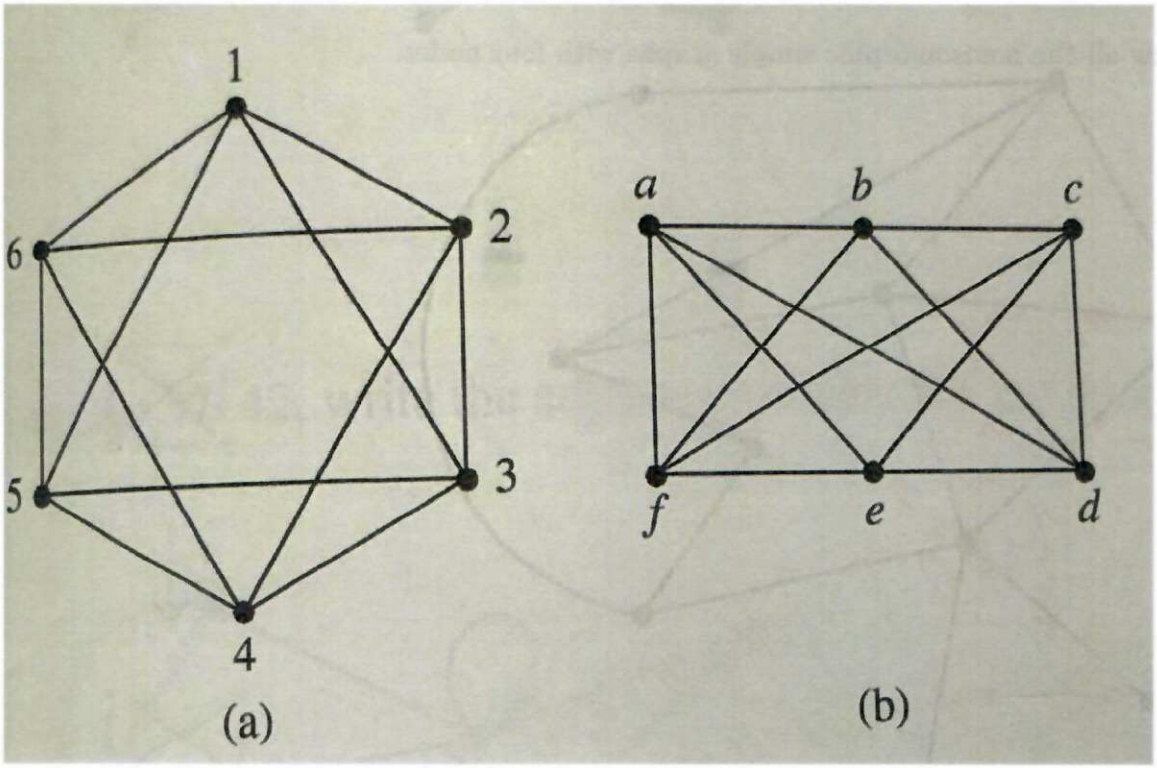
This because Graph B can be redrawn to match Graph A accurately.



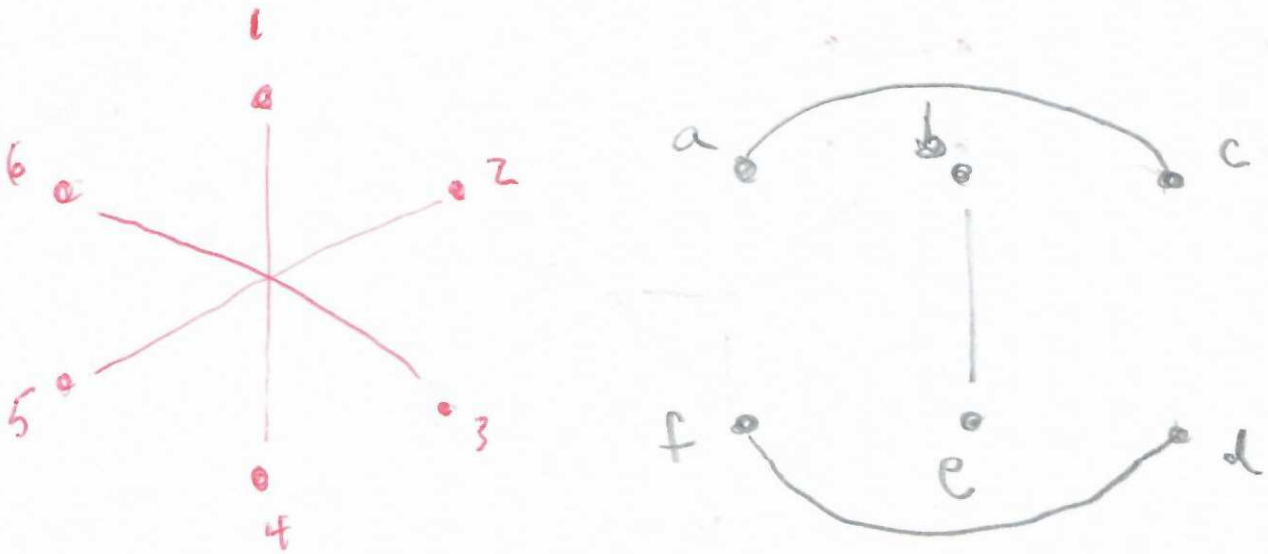
$a_1(a,b)$ $a_2(a,d)$ $a_3(a,e)$ $a_4(a,f)$
$a_5(b,c)$ $a_6(b,d)$ $a_7(b,f)$
$a_8(c,d)$ $a_9(c,e)$ $a_{10}(c,f)$ $a_{11}(d,e)$
$a_{12}(e,f)$

Each node is connected to 4 other nodes, but not the one across from them.

2. (4 pts) Decide if the two graphs are isomorphic. If so, give the function or functions that establish the isomorphism; if not, explain why.



Look at the duals!



They're isomorphic; so their duals are isomorphic.