Assignment 5: Due Thursday 9th May at 5pm

Late assignments will not be accepted except by prior arrangement (for a good reason)
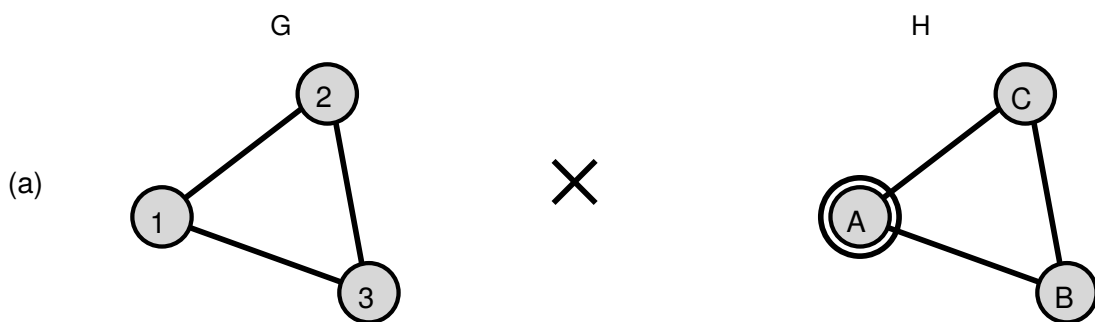
Please include your student number in your handed up work, as Canvas doesn't give this to me automatically.

1. Compute the following graph products
   (i) Cartesian product
   (ii) Rooted product

   of the following pair of graphs (in the order given), where node A is the root of H where relevant.
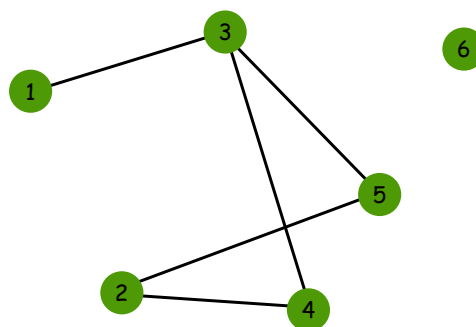

[2 marks]

2. Determine the maximum k such that the Cartesian product (above) is k-edge connected.

[2 marks]

3. Write code to derive the adjacency matrix of the line-graph $L(G)$ of an undirected graph (input via its adjacency matrix).

   Use your code to derive the degrees of the nodes of the line graph of the following graph. Please put your degrees in a table, where each node in the line graph is labelled by the edge it was derived from.

[3 marks]

4. Show that for a directed ring graph with n nodes and all edges pointing from node i to $i+1$ mod n that $A^{n+1} = A$ for adjacency matrix A.

[3 marks]