Name _____

No aids allowed. Answer all questions on test paper. Use backs of sheets if necessary.

Consider Savitch's algorithm given on a graph with the following adjacency matrix:

$$G = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 1 & 0 & 0 & 1 \\ 1 & 0 & 1 & 1 \\ 1 & 1 & 1 & 0 \end{bmatrix}$$

First, draw the graph corresponding to this adjacency matrix (is it directed or undirected?).
On the left is the stack during the computation of $R(G, 1, 4, 2)$. Using the same convention, present the stack for $R(G, 1, 3, 2)$ on the right.

```
R(G, 1 , 4 , 2 )
----------------
R(G, 1 , 1 , 1 )
R(G, 1 , 4 , 1 )
----------------
R(G, 1 , 1 , 0 )
R(G, 1 , 1 , 0 )
R(G, 1 , 4 , 1 )
----------------
T
R(G, 1 , 1 , 0 )
R(G, 1 , 4 , 1 )
----------------
R(G, 1 , 1 , 0 )
R(G, 1 , 4 , 1 )
----------------
T
R(G, 1 , 4 , 1 )
----------------
R(G, 1 , 4 , 1 )
----------------
R(G, 1 , 2 , 0 )
R(G, 2 , 4 , 0 )
----------------
T
R(G, 2 , 4 , 0 )
----------------
R(G, 2 , 4 , 0 )
----------------
T
```