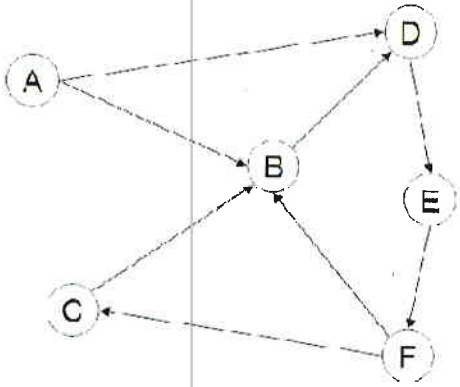
Math 2366, Quiz #13, Summer 2014 Name KEY

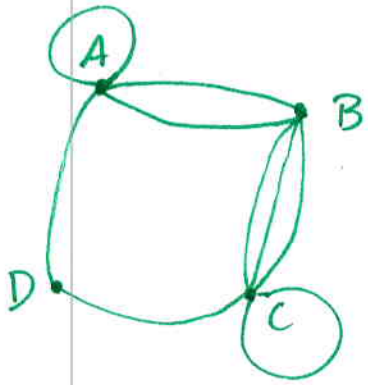
Instructions: Show all work. Justify answers as completely as possible. If you are asked to prove something, mere computation is not enough. You must explain your reasoning. Be sure to state your conclusion clearly. Incomplete work or justification will not receive full credit. Use exact answers unless specifically asked to round.

1. Write an adjacency matrix for the graph shown below.

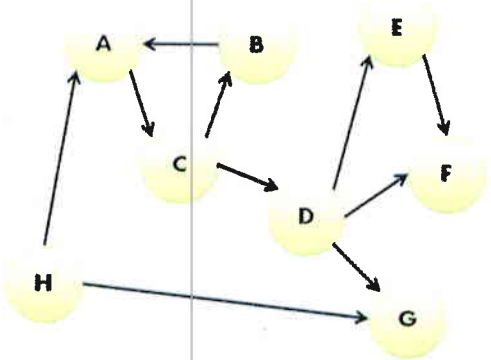


$$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 1 & 0 & 1 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 & 0 & 1 \\ 1 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 \end{bmatrix}$$

2. Draw the graph represented by the adjacency matrix $\begin{bmatrix} 1 & 2 & 0 & 1 \\ 2 & 0 & 3 & 0 \\ 0 & 3 & 1 & 1 \\ 1 & 0 & 1 & 0 \end{bmatrix}$.



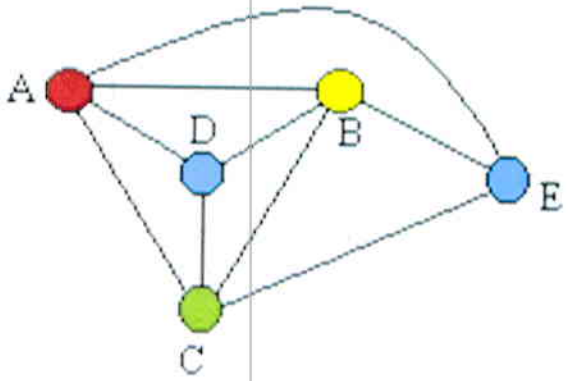
3. Determine if the directed graph shown below is strongly or weakly connected.



weakly connected

no way to get to H from outside H

4. Use the graph below and find as many paths and circuits as possible. List the sequence of vertices in order. For the circuits, you don't need to list permutations of the same vertices. If you reach 10 and there are still more, you can stop and just state that there are others.



{A, B}

{A, B, D}

{A, B, D, A}

{A, B, C}

{A, B, E}

{A, B, C, D}

{A, B, C, D, A}

{A, B, C, A}

{A, C, D, B, A}

{A, E, B, A}

{A, C, E, B, D, A}

etc.