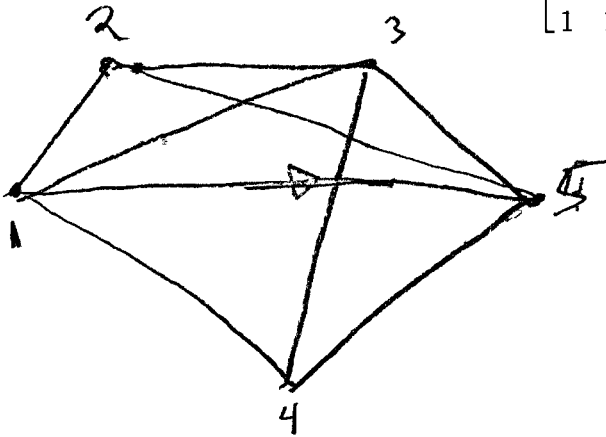


Solutions to Attendance Quiz for Lecture 20

1. (a) Draw the graph whose incidence matrix is

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



(b) Find all the paths of length 3 joining vertex 1 to vertex 4.

1234, 1254, 1354, 1534

(c) Find all the cycles of length 3

(123), (134), (135), (145), (345), (125), (235), and their reverses.

More explicitly

$1 \rightarrow 2 \rightarrow 3 \rightarrow 1$, $1 \rightarrow 3 \rightarrow 4 \rightarrow 1$, $1 \rightarrow 3 \rightarrow 5 \rightarrow 1$, $1 \rightarrow 4 \rightarrow 5 \rightarrow 1$,

$3 \rightarrow 4 \rightarrow 5 \rightarrow 3$, $1 \rightarrow 2 \rightarrow 5 \rightarrow 1$, $2 \rightarrow 3 \rightarrow 5 \rightarrow 2$,

and their reverses.