$$\begin{bmatrix} 2 & 3 \\ -1 & 0 \end{bmatrix} Y = \begin{bmatrix} 3 & -1 \\ 2 & 5 \end{bmatrix}$$

Inverse

1. $\begin{vmatrix} 2 & 3 \\ -1 & 0 \end{vmatrix} = 2(0) - (-1)(3)$

$0 - -3$

$= 3$

$\frac{1}{|A|}\begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$

$$Y = \frac{1}{3}\begin{bmatrix} 0 & -3 \\ 1 & 2 \end{bmatrix}\begin{bmatrix} 3 & -1 \\ 2 & 5 \end{bmatrix} = \begin{bmatrix} 0(3)+-3(2) & 0(-1)+-3(5) \\ 0-6 & 0-15 \\ -6 & -15 \\ 1(3)+2(2) & 1(-1)+2(5) \\ 3+4 & -1+10 \\ 7 & 9 \end{bmatrix}$$

2x2 2x2

$$= \frac{1}{3}\begin{bmatrix} -6 & -15 \\ 7 & 9 \end{bmatrix}$$

$$Y = \begin{bmatrix} -2 & -5 \\ \frac{7}{3} & 3 \end{bmatrix}$$

$$\begin{bmatrix} \overset{x}{2} & \overset{y}{3} \\ -1 & 0 \end{bmatrix} Y = \begin{bmatrix} 3 \\ 2 \end{bmatrix}$$

$$D = \begin{vmatrix} 2 & 3 \\ -1 & 0 \end{vmatrix} = 2(0) - (-1)(3) = 3$$

$$D_x = \begin{vmatrix} 3 & 3 \\ 2 & 0 \end{vmatrix} = 3(0) - 2(3) = -6$$
$$0 - 6$$

$$D_y = \begin{vmatrix} 2 & 3 \\ -1 & 2 \end{vmatrix} = 2(2) - (-1)(3) = 7$$
$$4 + 3$$

$$x = \frac{D_x}{D} = \frac{-6}{3} = -2$$

$$y = \frac{D_y}{D} = \frac{7}{3} = \frac{7}{3}$$

Warm-up

January 27, 2017

Solve.

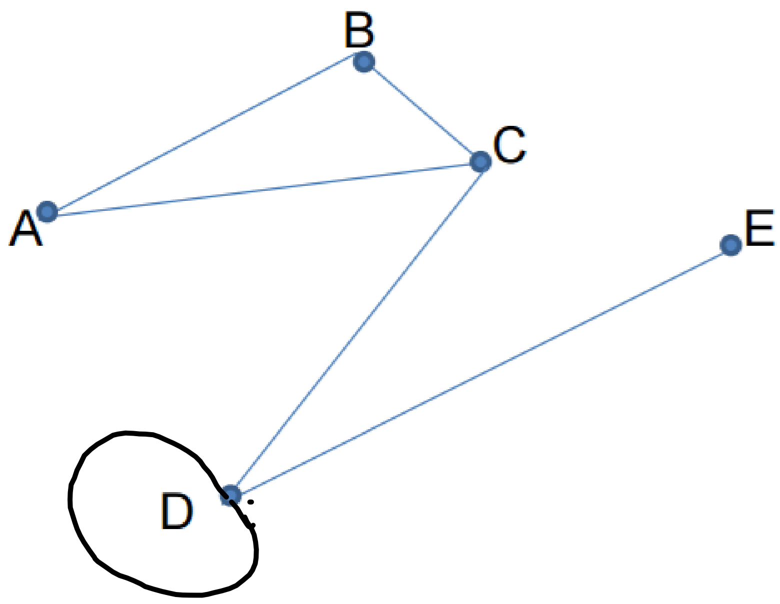
$$\begin{bmatrix} 3 & 2 \\ -1 & 0 \end{bmatrix} X = \begin{bmatrix} 2 & 3 \\ -1 & 0 \end{bmatrix}$$

$0 - {}^{-}2 = 2$

$$\frac{1}{2}\begin{bmatrix} 2 & 0 \\ 1 & 3 \end{bmatrix}$$

$$\begin{bmatrix} 0 & -2 \\ 1 & 3 \end{bmatrix} \cdot \begin{bmatrix} 2 & 3 \\ -1 & 0 \end{bmatrix} = \begin{bmatrix} 2 & 0 \\ -1 & 3 \end{bmatrix}$$

2x2 2x2



vertex-edge graph

	A	B	C	D	E
A	0	1	1	0	0
B	1	0	1	0	0
C	1	1	0	1	0
D	0	0	1	1	1
E	0	0	0	1	0

adjacency matrix

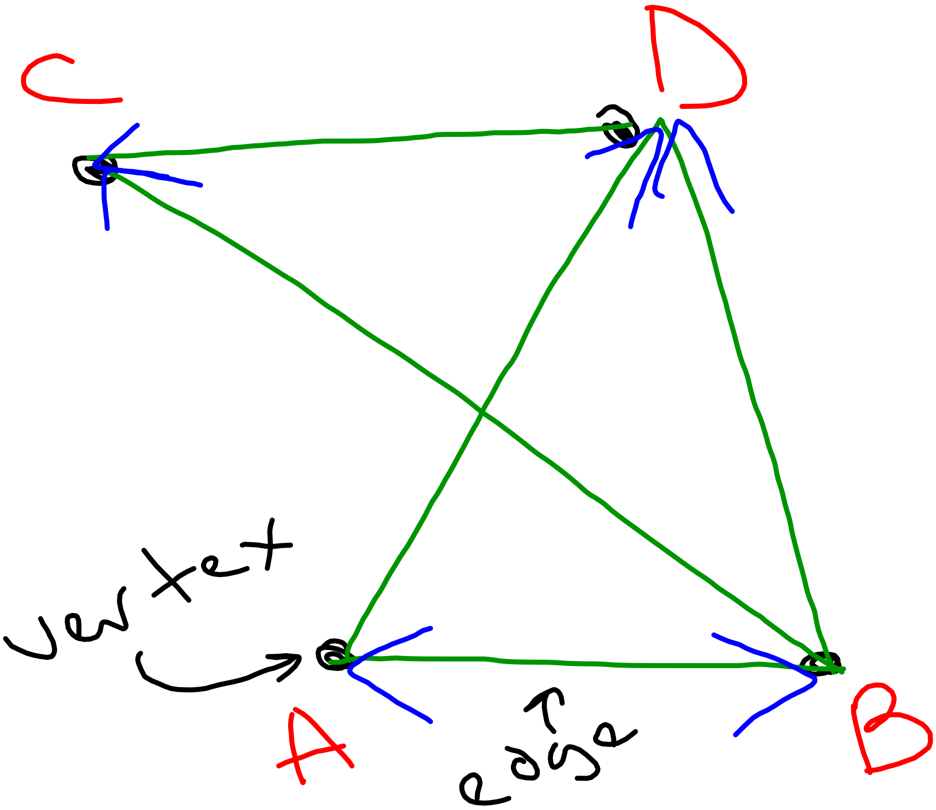
	A	B	C	D	E
A	0	1	1	0	0
B	1	0	1	0	0
C	1	1	0	1	0
D	0	0	1	1	1
E	0	0	0	1	0

adjacency matrix

5x5

	A	B	C	D	E
A	0	1	1	0	0
B	1	0	1	0	0
C	1	1	0	1	0
D	0	0	1	1	1
E	0	0	0	1	0

Adjacency Matrix



vertex-edge graph

digraph

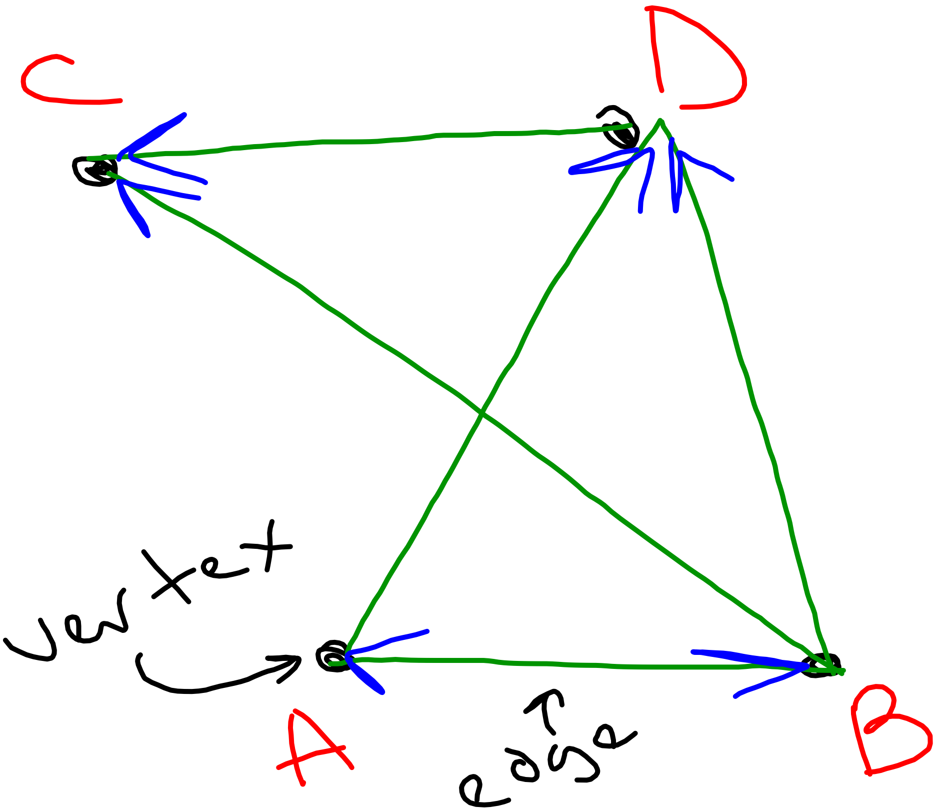
	A	B	C	D
A	0	1	0	1
B	1	0	1	1
C	0	1	0	1
D	1	1	1	0

	A	B	C	D
A	0	1	0	1
B	1	0	1	1
C	0	0	0	0
D	0	0	1	0

	A	B	C	D
A	0	1	0	1
B	1	0	1	1
C	0	1	0	1
D	1	1	1	0

to

from	A	B	C	D
A	0	0	0	1
B	1	0	1	0
C	0	1	0	1
D	0	0	1	0



digraph

↓

direction

to

from	A	B	C	D
A	0	1	0	1
B	1	0	1	1
C	0	0	0	0
D	0	0	1	0

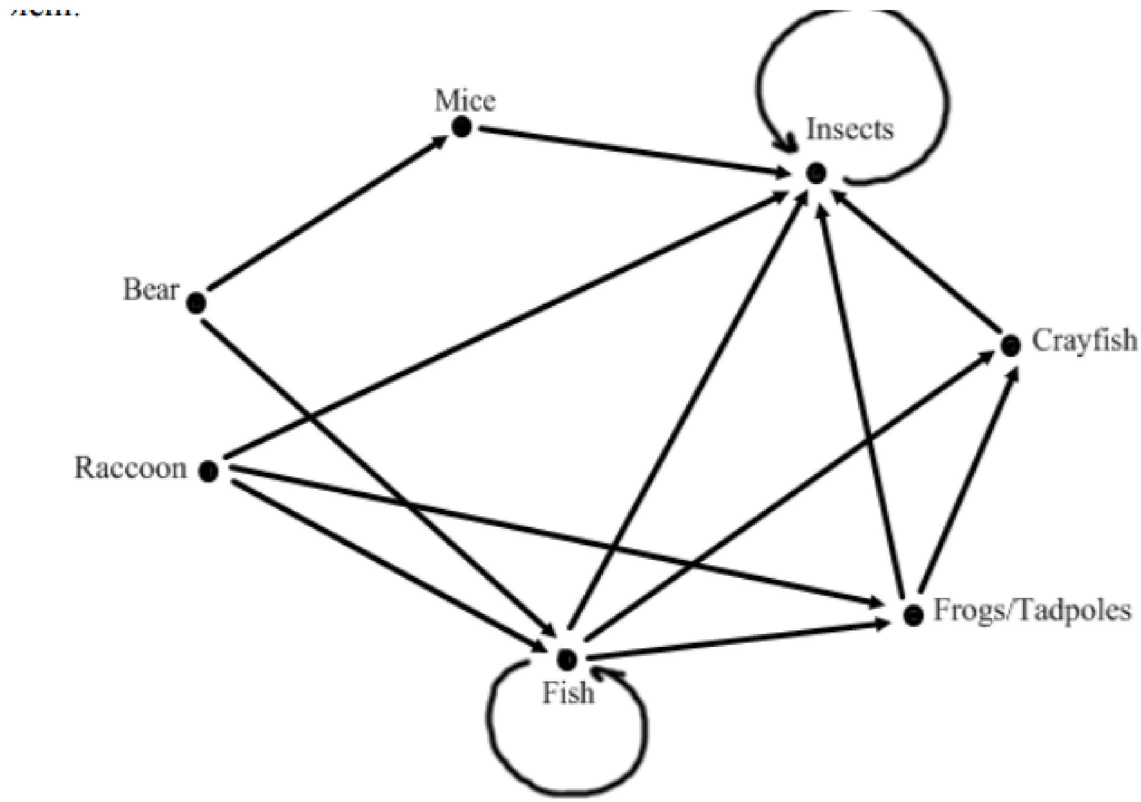
digraph

Adjacency matrix

	A	B	C	D
A	0	1	0	1
B	1	0	1	1
C	0	1	0	1
D	1	1	1	0

vertex-edge

adjacency matrix


Mice
Insects
Bear
Crayfish
Raccoon
Frogs/Tadpoles
Fish

	B	C	F	Fr	I	M	R
B	0	0	1	0	0	1	0
C							
F							
Fr							
I							
M							
R							

	B	C	F	Fr	I	M	R
B	0	0	1	0	0	1	0
C	0	0	0	0	1	0	0
F	0	1	1	1	1	0	0
Fr	0	1	0	0	1	0	0
I	0	0	0	0	1	0	0
M	0	0	0	0	1	0	0
R	0	0	1	1	1	0	0

	B	C	F	Fr	I	M	R
B	0	0	1	0	0	1	0
C	0	0	0	0	1	0	0
F	0	1	1	1	1	0	0
Fr	0	1	0	0	1	0	0
I	0	0	0	0	1	0	0
M	0	0	0	0	1	0	1
R	0	0	1	1	1	0	0

Joel