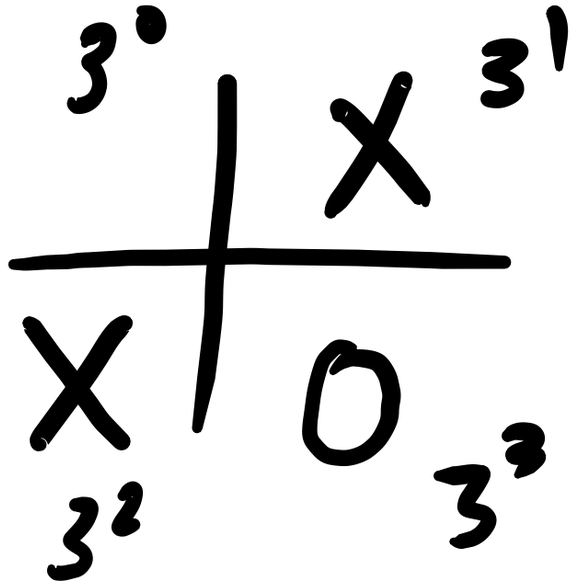
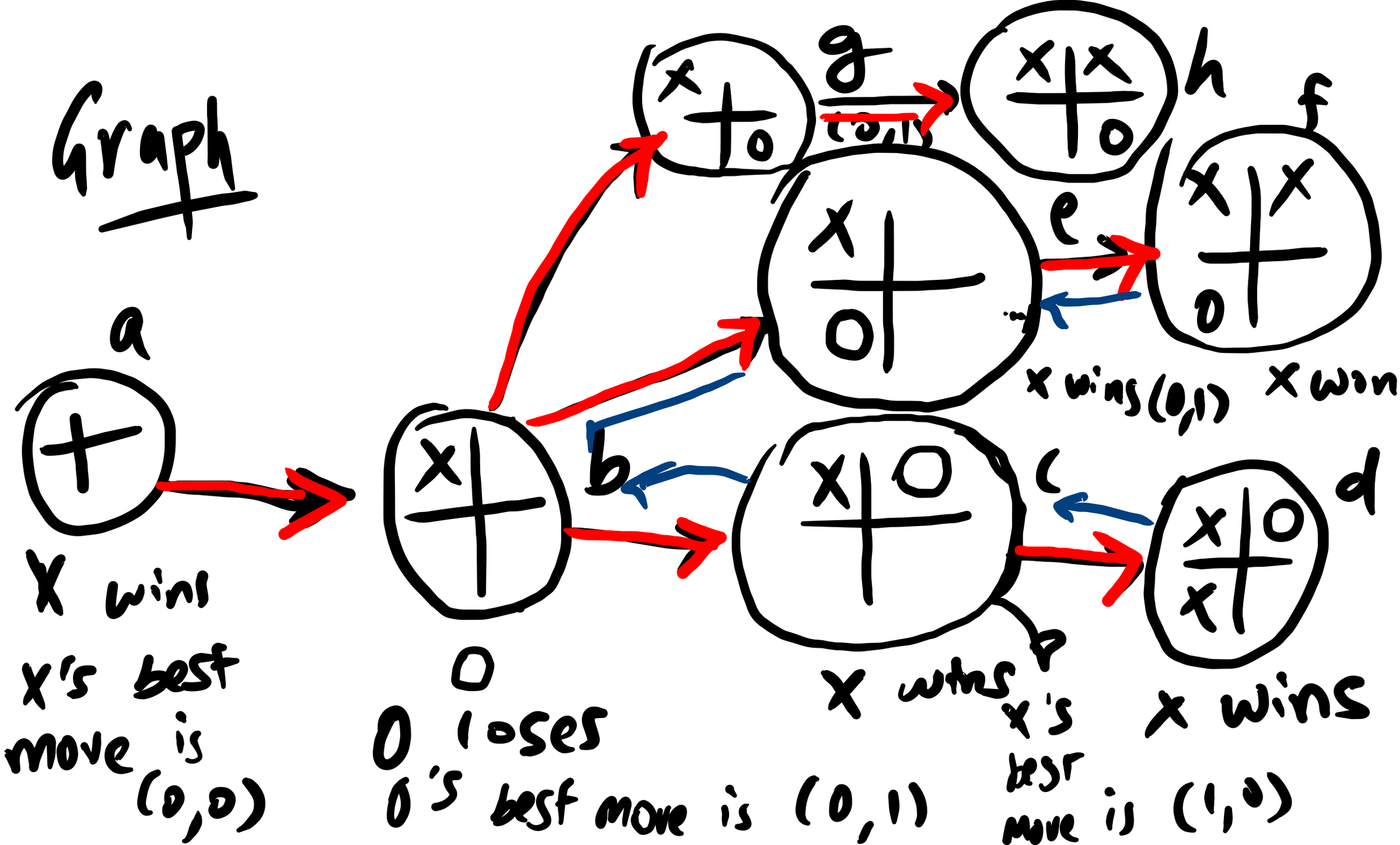


$(2110)_3 = 66_{10}$

$2 \times 3^3 + 1 \times 3^2 + 1 \times 3 + 0$

$=$

Graph


a
X wins
X's best move is (0,0)
O
O loses
O's best move is (0,1)
b
X wins
c
X's best move is (1,0)
d
X wins
e
X wins (0,1)
f
X win
g
h

Graph has

a finite set of "vertices" V

a set of "edges" $E \subseteq V \times V$

In previous figure

$$V = \{ a \ldots h \}$$

$$E = \{ (a,b), (b,c), (c,d), (b,e), (e,f), (b,g), (g,h) \}$$

Road networks

Vertices ~ Cities
edges ~ roads connecting cities.

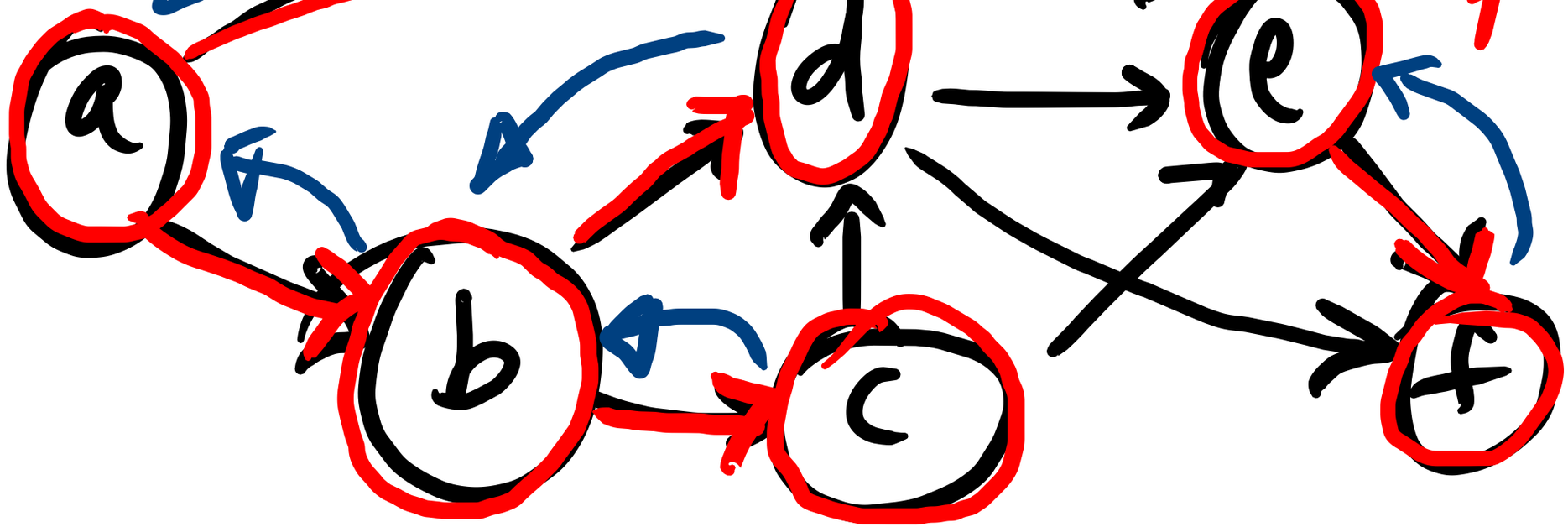
Social networks

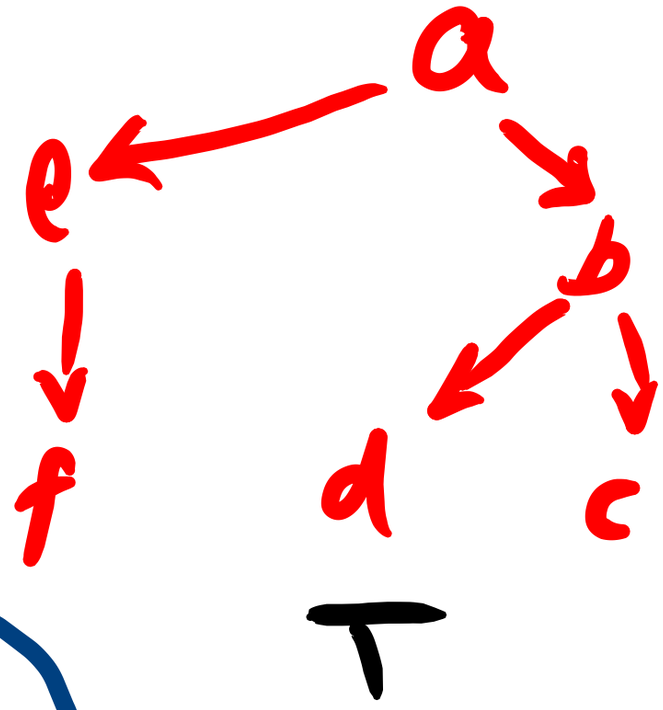
Vertices ~ accounts
edges ~ "friend" relationships.

$A \rightarrow B$ edge (A, B)
A "follows" B.

"Depth-first search"

G =





T

a e f b d c

T is a Depth-first tree of G.

a b c d e f

a → b → c → d → e → f

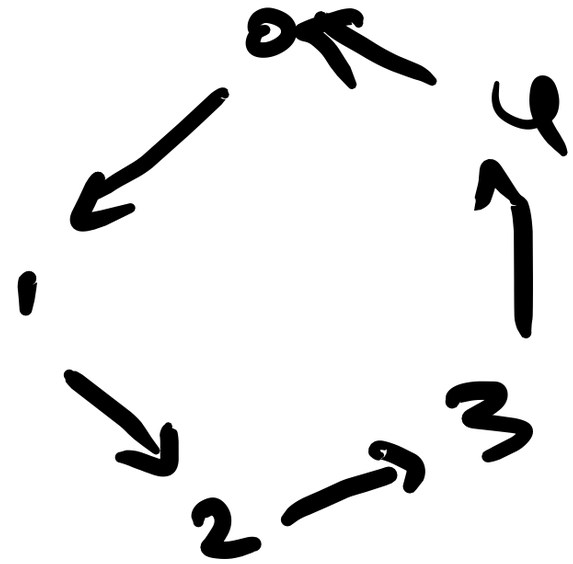
also a depth-first search tree of the same graph.

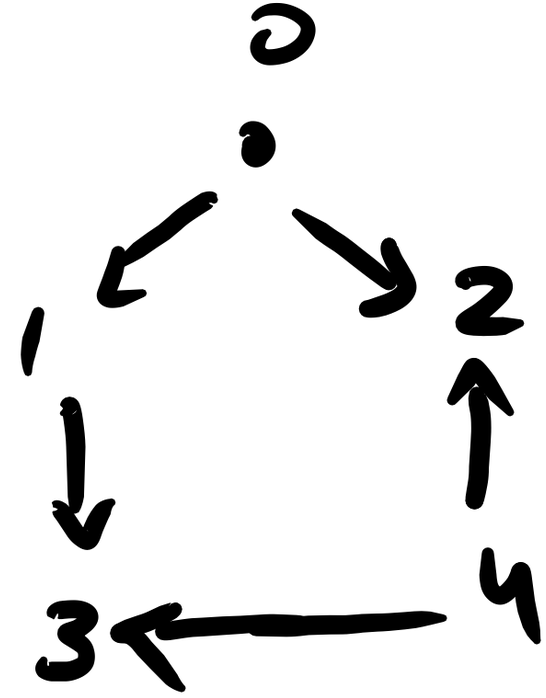
a b d c e f

Not possible!

Why? Because from d, we would go to one of e or f in a DFS.

HW Draw DFS trees





Start from 0.