习题一. 7.8

7. 同构 对于图 $(a)=(V_1,E_1)$ $(b)=(V_2,E_2)$

建立双射: $G(V_6)=f$. $G(V_2)=a$, $G(V_4)=e$. $G(V_5)=d$ $G(V_1)=b$

$G(V_3)=C$.

则 所有 $(U,V)\in E_1$ 均有 $(G(U),G(V))\in E_2$

$(V_1,V_2)\in E_1 \longleftrightarrow (b,a)\in E_2$ $(V_6,V_1)\in E_1 \longleftrightarrow (f,b)\in E_2$

$(V_1,V_4)\in E_1 \longleftrightarrow (b,e)\in E_2$ $(V_6,V_3)\in E_1 \longleftrightarrow (f,c)\in E_2$

$(V_2,V_5)\in E_1 \longleftrightarrow (a,d)\in E_2$ $(V_6,V_4)\in E_1 \longleftrightarrow (f,e)\in E_2$

$(V_3,V_1)\in E_1 \longleftrightarrow (c,b)\in E_2$

$(V_3,V_4)\in E_1 \longleftrightarrow (c,e)\in E_2$

$(V_5,V_3)\in E_1 \longleftrightarrow (d,C)\in E_2$

故 $a\cong b$

Def: $G_1\cong G_2$

① $V_1\to V_2$ 存在双射

② 所有

$(U,V)\in E_1 \longleftrightarrow (f(u),f(v))\in E_2$

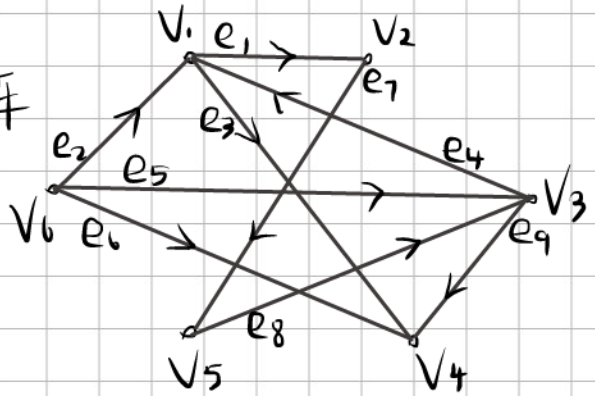
8.

	V_1	V_2	V_3	V_4	V_5	V_6
V_1	0	1	0	1	0	0
V_2	0	0	0	0	1	0
V_3	1	0	0	1	0	0
V_4	0	0	0	0	0	0
V_5	0	0	1	0	0	0
V_6	1	0	1	1	0	0

邻接矩阵

关联矩阵

标号如右图所示



$$\begin{bmatrix} 1 & -1 & 1 & -1 & 0 & 0 & 0 & 0 & 0 \\ -1 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & -1 & 0 & 0 & -1 & 1 \\ 0 & 0 & -1 & 0 & 0 & -1 & 0 & 0 & -1 \\ 0 & 0 & 0 & 0 & 0 & 0 & -1 & 1 & 0 \\ 0 & 1 & 0 & 0 & 1 & 1 & 0 & 0 & 0 \\ e_1 & e_2 & e_3 & e_4 & e_5 & e_6 & e_7 & e_8 & e_9 \end{bmatrix}$$

边列表

A: (1 1 2 3 3 5 6 6 6)

B: (2 4 5 1 4 3 1 3 4)

正向表:

A:

1	3	4	6	6	7	10

B:

2	4	5	1	4	3	1	3	4