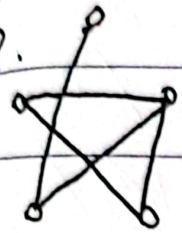
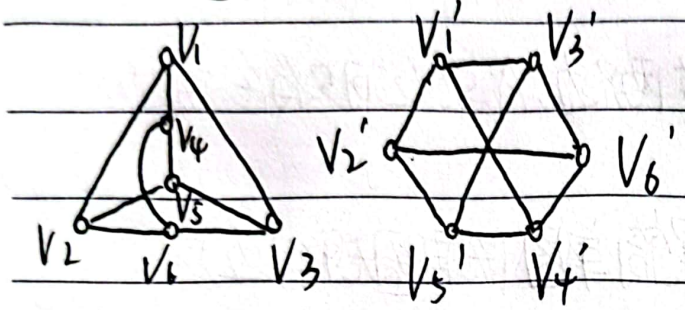
P316.

2.



3. 如图



由图知，定义函数 $\varphi: V \to V'$，$\psi: e \to e'$

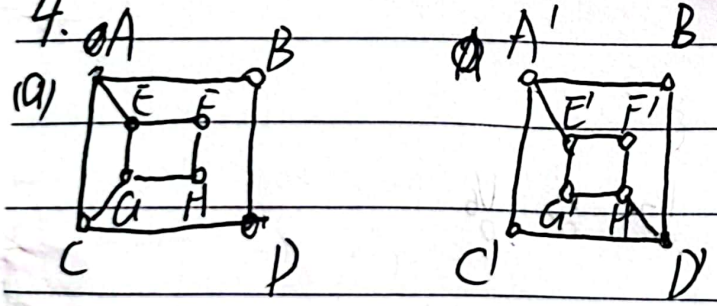
其中 $\varphi(V_i) = V_i'$

$\psi(e_i) = e_i'$

由图可证：$\psi((V_i, V_j)) = (\varphi(V_i), \varphi(V_j)) = (V_i', V_j')$

∴两图同构.

4.



设 $h: V \to V'$

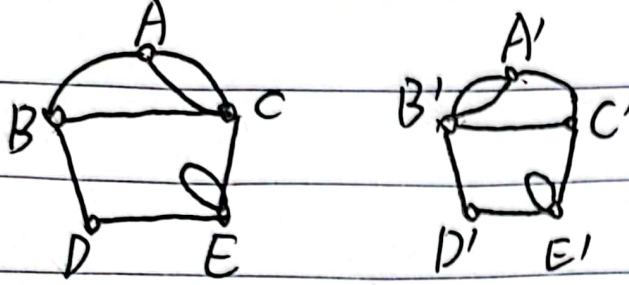
$h(V) = V'$

则 $(C, G) \in e$，$(h(C), h(G)) = (C', G') \in e'$

∴不同构

(E点)

如图：(图形对应由自圈点固定)



~~最小~~定义 $h: V \to V'$

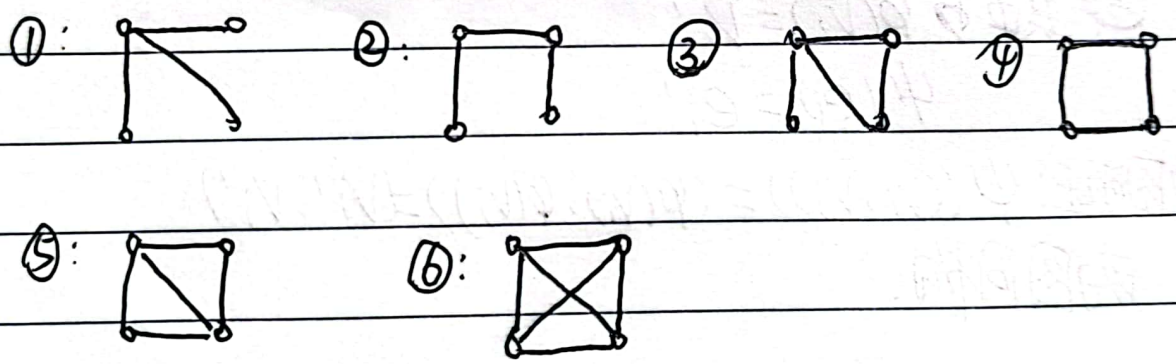
$h(V) = V'$

则 A与C之间有在两条边，A'与C'之间只有在一条边，

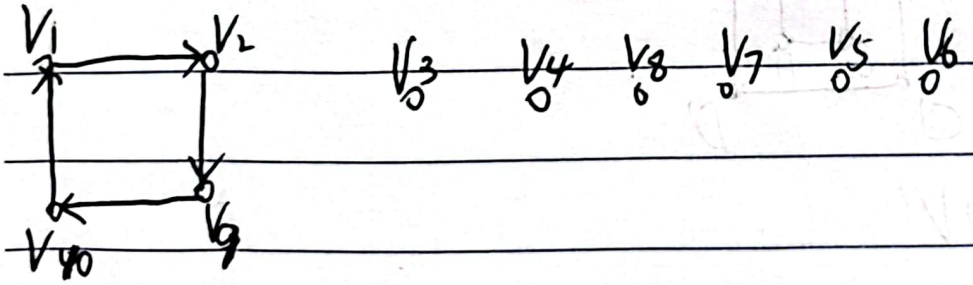
∴不同构

8. 只有(C)是连通图，只有C是简单图(无自圈无平行边)

9. 有6种



14. 强连通分支



$V(G_1) = \{V_1, V_2, V_9, V_{10}\}$

$V(G_2) = \{V_3\}$

$V(G_3) = \{V_4\}$

$V(G_4) = \{V_5\}$

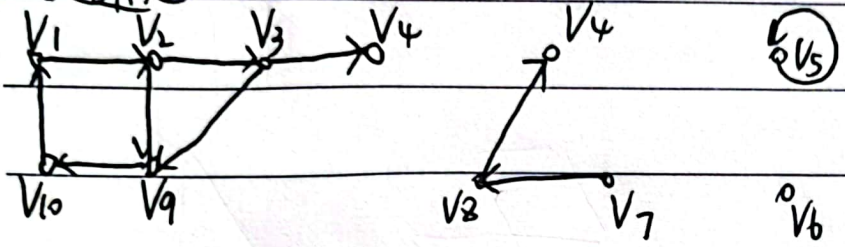
$V(G_5)=\{V_0\}$

$V(G_7)=\{V_1\}$

$V(G_8)=\{V_8\}$

$e(G_1)=\{(V_1,V_2),(V_2,V_9)(V_9,V_{10})(V_{10},V_1)\}$

单连通图



$V(G_1)=\{V_1,V_2,V_3,V_4,V_9,V_{10}\}$

$V(G_2)=\{V_4,V_7,V_8\}$

$V(G_3)=\{V_5\}$

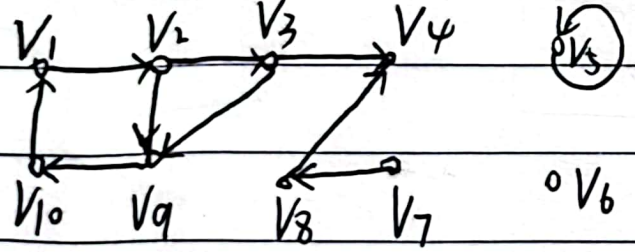
$V(G_4)=\{V_6\}$

$e(G_1)=\{(V_1,V_2)(V_2,V_9)(V_9,V_{10})(V_{10},V_1),(V_2,V_3)(V_3,V_9)(V_3,V_4)\}$

$e(G_2)=\{(V_7,V_8)(V_8,V_4)\}$.

$e(G_3)=\{(V_5,V_5)\}$.

多连通图



$e(G_1)=\{(V_1,V_2)(V_2,V_9),(V_9,V_{10})(V_{10},V_1)$

$(V_2,V_3)(V_3,V_9)(V_3,V_4)(V_8,V_4)(V_7,V_8)\}$.

$V(G_1)=\{V_1,V_2,V_3,V_4,V_7,V_8,V_9,V_{10}\}$

$V(G_2)=\{V_5\}$

$V(G_3)=\{V_6\}$