

# Discrete Math 2 HW 4

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October 13, 2016

**Problem 10.2.22.**

Yes. Group 1:  $[a, c]$  Group 2:  $[b, d, e]$

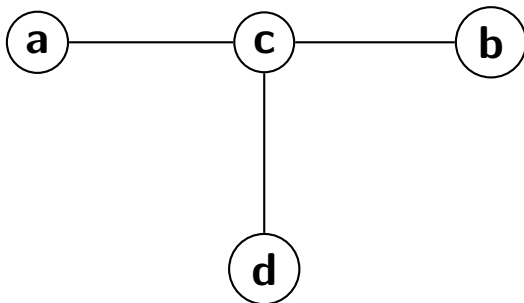
**Problem 10.2.24.**

Yes. Group 1:  $[f, c]$  Group 2:  $[a, b, e, d]$

**Problem 10.2.50.**

112

**Problem** For the graph in 10.2.24, what is the subgraph induced by  $\{a, b, c, d\}$ ?



**Problem 10.3.2.**

Vertex	Adjacent Vertices
a	b,d
b	a,d,e
c	d,e
d	a,b,c
e	b,c

**Problem 10.3.4.**

Initial Vertex	Terminal Vertices
a	b,d
b	a,c,d,e
c	c,d
d	a,e
e	e,c

**Problem 10.3.6.**

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

**Problem 10.3.8.**

		To				
		A	B	C	D	E
From	A	0	1	0	1	0
	B	1	0	1	1	1
	C	0	1	1	0	0
	D	1	0	0	0	1
	E	0	0	1	0	1

**Problem 10.3.36.**

No: V has a vertex with degree 4 and U does not

**Problem 10.3.38.**

Yes:  $u_2 \rightarrow v_5$

$u_4 \rightarrow v_3$

$u_1 \rightarrow v_1$

$u_5 \rightarrow v_4$

$u_3 \rightarrow v_2$

**Problem 10.3.40.**

No: V has a vertex with degree 4 and U does not

**Problem 10.4.22.**

No because H has 2 symmetric rhombuses for paths which G does not have.

**Problem 10.4.12.**

- a. weak
- b. strong
- c. neither

**Problem 10.4.14.**

- a. Component 1: a, b, e  
Component 2: d  
Component 3: c
- b. Component 1: f  
Component 2: c, e, d  
Component 3: a  
Component 4: b
- c. Component 1: a, b, c, d, f, g, h, i  
Component 2: e

**Problem 10.4.50.**

- a.  $\lambda(G) = 2$ ,  $K(G) = 1$ ,  $\min \deg = 2$  so  $K(G) < \lambda(G) \leq \min \deg$
- b.  $\lambda(G) = 3$ ,  $K(G) = 1$ ,  $\min \deg = 3$  so  $K(G) < \lambda(G) \leq \min \deg$
- c.  $\lambda(G) = 2$ ,  $K(G) = 2$ ,  $\min \deg = 3$  so  $K(G) \leq \lambda(G) < \min \deg$
- d.  $\lambda(G) = 4$ ,  $K(G) = 4$ ,  $\min \deg = 4$  so  $K(G) \leq \lambda(G) \leq \min \deg$