

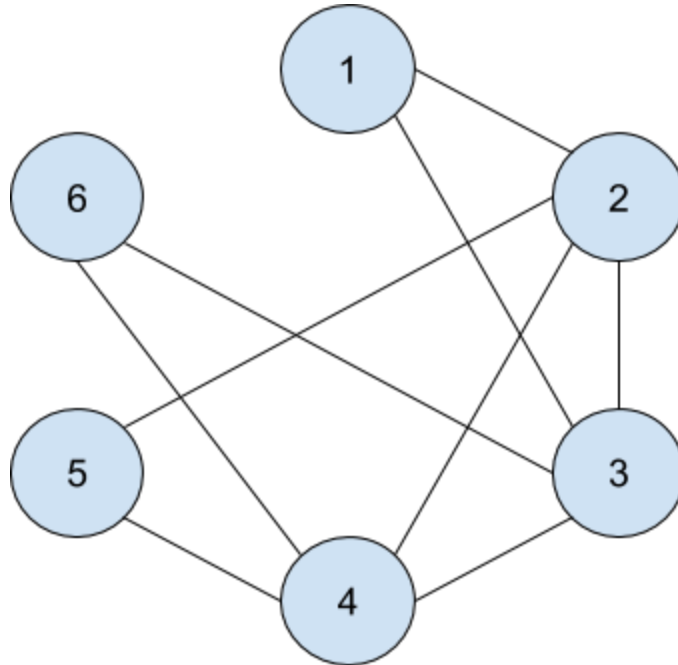
# Assignment 3

1 (a)

This graph is not a simple graph, as the  $\text{deg}(v_2) = 5$ . The graph only has 5 vertices, therefore, it can only have maximum degree of 4.

1 (b)

This graph is feasible.



2. For  $G = (V,E)$

$$V = \{1,2,3,4,5,6,7,8\}$$

$$E = \{\{1,5\},\{2,8\},\{2,4\},\{3,5\},\{3,6\},\{3,8\},\{4,5\},\{5,6\},\{6,8\},\{7,8\}\}$$

3.

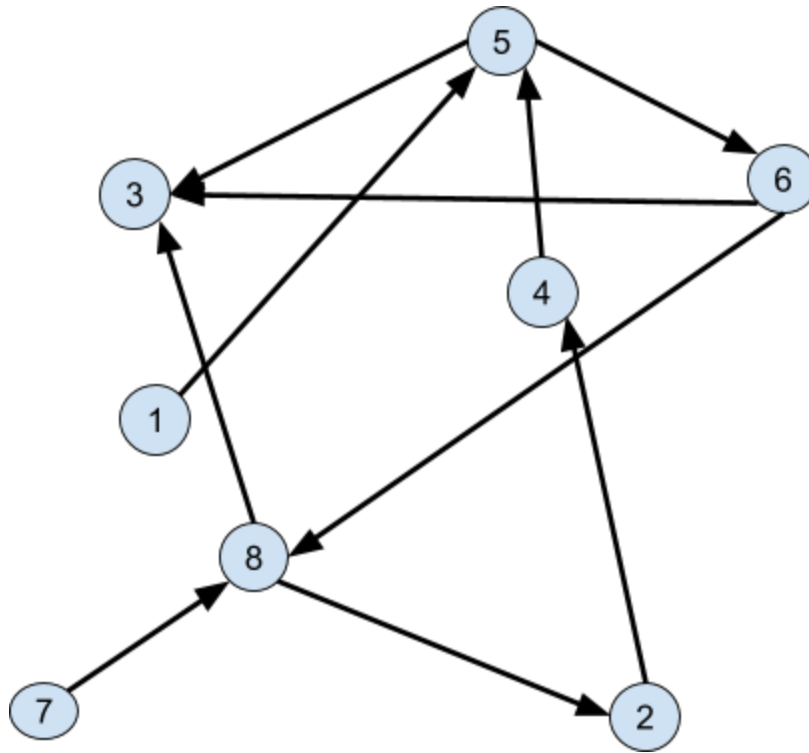
	1	2	3	4	5	6	7	8
1	0	0	0	0	1	0	0	0
2	0	0	0	1	0	0	0	1
3	0	0	0	0	1	1	0	1
4	0	1	0	0	1	0	0	0
5	1	0	1	1	0	1	0	0

<b>6</b>	0	0	1	0	1	0	0	1
<b>7</b>	0	0	0	0	0	0	0	1
<b>8</b>	0	1	1	0	0	1	1	0

4.

Current Vertex	Adjacent Vertices
1	5
2	4,8
3	5,6,8
4	2,5
5	1,3,4,6
6	3,5,8
7	8
8	2,3,6,7

5.

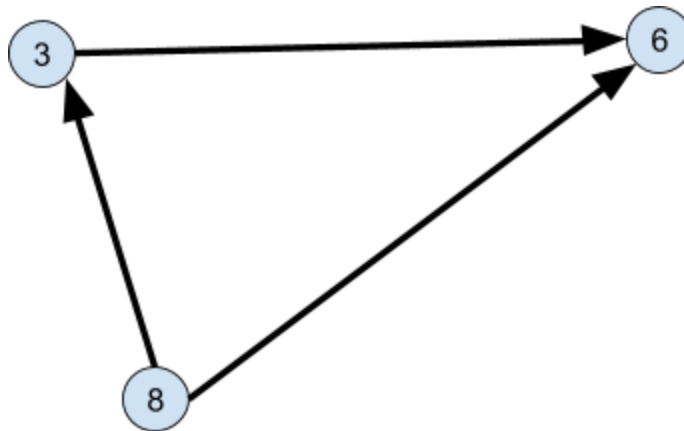


For  $G' = (V, E)$   
 $V' =$

$\{1, 2, 3, 4, 5, 6, 7, 8\}$

$E' = \{\{1, 5\}, \{3, 5\}, \{5, 6\}, \{7, 8\}, \{8, 2\}, \{2, 4\}, \{4, 5\}, \{8, 6\}, \{8, 3\}, \{3, 6\}\}$

6.  $G''$



For  $G'' = (V'', E'')$

$V'' = \{3, 6, 8\}$

$$E'' = \{\{8,3\}, \{3,6\}, \{8,6\}\}$$

	3	6	8
3	0	1	0
6	0	0	0
8	1	1	0

7.

$$E''' = \{\{2,3\}, \{4,3\}\}$$

Cardinality( $E'''$ )= 2

