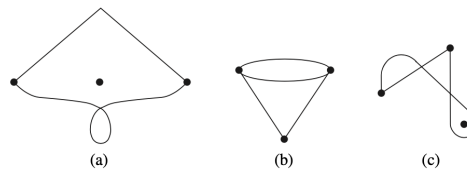


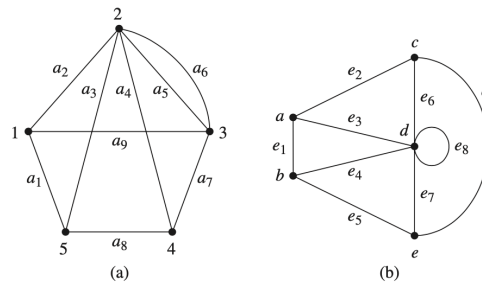
```
In [1]: ### CSCI-3080 Discrete Structure
### OLA 4: Chapter 6 -- Graphs and Trees
### Name:
### Student ID:
### Date:
```

1. Which of the following graphs is not isomorphic to the others, and why?



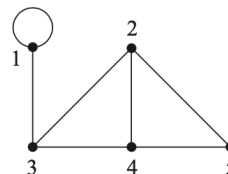
In []:

2. Decide if the two graphs are isomorphic. If so, give the function or functions that establish the isomorphism; if not, explain why.



In []:

3. Write the adjacency matrix for the given graph.



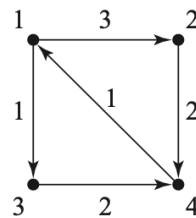
In []:

4. Draw the weighted graph represented by the following adjacency matrix.

$$\begin{pmatrix} 0 & 1 & 0 & 0 & 0 & 0 \\ 1 & 0 & 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 2 \\ 0 & 0 & 0 & 0 & 2 & 0 \end{pmatrix}$$

In []:

5. Write the adjacency list representation for the given weighted directed graph.



In []:

6. Please draw the expression tree for the expression:

$$[(x - 2) * 3] + (5 + 4)$$

1. Please draw the expression binary tree
2. Write the list of nodes resulting from a **preorder** traversal, an **inorder** traversal, and a **postorder** traversal of the given tree

In []:

7. Given the codes:

character	b	h	q	w	%
encoding	1000	1001	0	11	101

- (1) decode the sequence 10001001101101
- (2) decode the sequence 11110
- (3) decode the sequence 01001111000

In []:

8.

Character	?	x	w	e	t	s	a
Frequency	14	3	11	27	18	22	5

- (1) Please construct the Huffman tree for the above characters and frequencies.
- (2) Please find the Huffman codes for these characters.
- (3) A file consisting of 100,000 instances of these seven characters is stored using a fixed-length binary encoding scheme. How many bits are required for each code and what is the total number of bits needed?
- (4) Storing the same file using the Huffman code in (2), how many bits are needed?

In []:

In []: