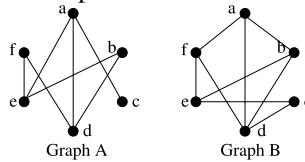


## Discrete Mathematics: Tutorial 15 and 16

1. Draw a directed graph with 5 vertices having the following in and out degrees:

|            |          |          |          |          |          |
|------------|----------|----------|----------|----------|----------|
|            | <i>a</i> | <i>b</i> | <i>c</i> | <i>d</i> | <i>e</i> |
| in-degree  | 1        | 1        | 1        | 1        | 0        |
| out-degree | 3        | 1        | 0        | 0        | 0        |

2. Draw a simple graph with five vertices, and degree sequence 2,3,3,4,4.
3. Can a graph have degree sequence 3,4,4,5,6,6,6,7? Can a simple graph have degree sequence 3,3,3,3,5,5?
4. Are the two graphs shown below bipartite?



5. Two of the three graphs shown below are isomorphic. Which are they? Why are they not isomorphic to the third?

