

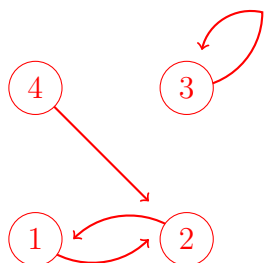
## Answer Key

1. a. Vertices: **6**
- b. Edges: **6**
- c. Write down the degree of each node:

Vertex $v$	$\deg(v)$
$a$	<b>2</b>
$b$	<b>2</b>
$c$	<b>2</b>
$d$	<b>2</b>
$e$	<b>3</b>
$f$	<b>1</b>

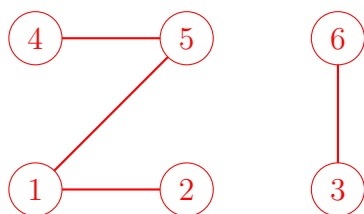
- d. Maximum degree: **3**
  - e. Minimum degree: **1**
2. a.  $a \rightarrow b \rightarrow c$  (2) or  $a \rightarrow d \rightarrow c$  (2) or  $a \rightarrow c$  (1).
  - b. Example:  $a \rightarrow b \rightarrow c \rightarrow a$
  - c. Example:  $a \rightarrow b \rightarrow c \rightarrow d$
3. a. Trail:  
Example:  $KC \rightarrow Independence \rightarrow Lee's Summit$
  - b. Circuit:  
Example:  $KC \rightarrow Independence \rightarrow Lee's Summit \rightarrow Grandview \rightarrow KC \rightarrow Overland Park \rightarrow Olathe \rightarrow Grandview \rightarrow KC$
  - c. Cycle:  
Example:  $KC \rightarrow Independence \rightarrow Lee's Summit \rightarrow Grandview \rightarrow KC$
  - d. Eulerian Trail:  
Example:  $Olathe \rightarrow Overland Park \rightarrow Olathe \rightarrow Grandview \rightarrow KC \rightarrow Grandview \rightarrow Lee's Summit \rightarrow Independence \rightarrow KC \rightarrow Overland Park$
  - e. Parallel Edges:  
Yes:  $Olathe \rightarrow Overland Park, KC \rightarrow Grandview$

4. Many solutions. Example:



5. Many solutions. Example:

Graph:



Subgraph:

