8.1a Review 1-7 all Exer. 1-15 odd

Review

(1) An undirected graph consists of a set V of vertices and a set E of edges such that each edge $e \in E$ is associated with an unordered pair of vertices.

(2) College Majors. An undirected graph can be used by letting the vertices denote the students and placing an edge between two students if they have the same major.

(3) A directed graph consist of a set V of vertices and a set E of edges such that each edge $e \in E$ is associated with an ordered pair of vertices

(4) seniority can be modeled with a directed graph by letting the vertices denote individuals and placing a directed edge from individual i_m to individual i_n if i_n has more seniority than i_m

(5) An edge e is said to be incident on vertices v and w if e is associated with v and w.

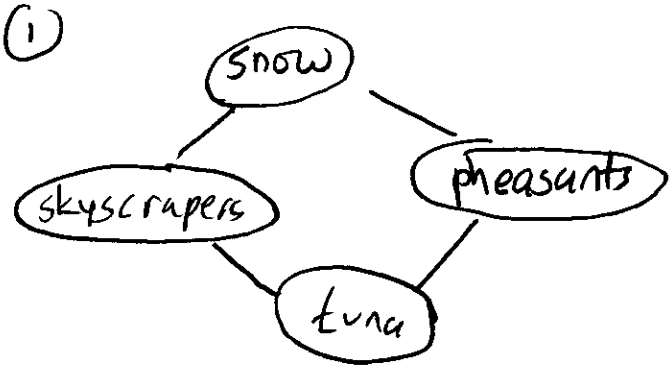
(6) A vertex is said to be incident on an edge e if the vertex is associated with e.

(7) v and w are adjacent vertices if there is an edge e associated with v and w.

8.1 a

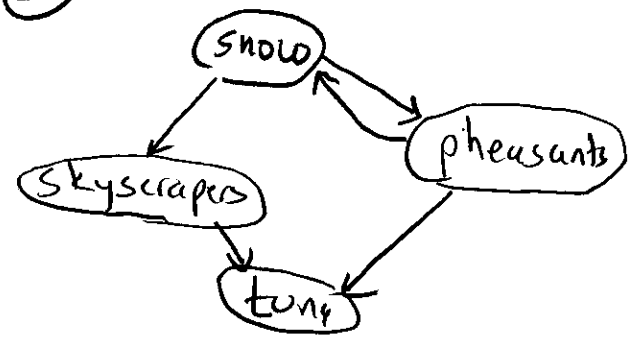
exercises 1-15 odd

(1)



- undirected
- simple - no loops
  - no ||-edges

(3)



- directed
- not simple (has ||-edges)

(5) Since an odd number of edges touches some vertices there is no path from a to q that passes through each edge exactly one time.

(7) vertex b has 5 edges touching it.

(8) $a \to b \to c \to e \to f \to d \to e \to b \to d \to c \to q$

opps!

(9) $q \to b \to d \to e \to f \to c \to e \to b \to c \to q$

(11) $V = \{v_1, v_2, v_3, v_4\}$

$E \{e_1, e_2, e_3, e_4, e_5, e_6\}$

||-edges = e_1, e_6

loops = e_5

isolated vertices - none

G - not simple

e_1 is incident on vertices v_1 and v_2

(13) $V = \{v_1, v_2, v_3\}$

$E = \emptyset$

||-edges - none

loops - none

isolated vertices: v_1, v_2 & v_3

*G is simple

e_1 does not exist?

(15) $K_1 = 0$, $K_2 = 1$, $K_3 = \underset{1+2}{3}$

$K_4 = \underset{1+2+3}{6}$, $K_5 = \underset{1+2+3+4}{10}$

$K_n = \sum_{i=1}^{n} i = \frac{n(n-1)}{2}$

(17) Bipartite $V_1 = \{v_1, v_2, v_5\}$

$V_2 = \{v_3, v_4\}$