Math 322
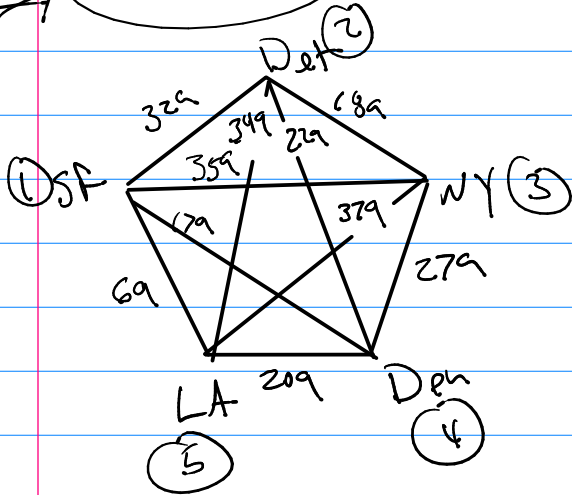
Q's / (10.6 #27)

$$K_5 \longrightarrow \frac{4!}{2} = \frac{4 \cdot 3 \cdot 2 \cdot 1}{2} = 12$$

Hamilton Circuits	Costs
1 2 3 4 5 1 =	add flights
1 2 3 5 4 1 =	add
1 2 4 3 5 1 =	add
1 2 4 5 3 1	etc
1 2 5 3 4 1	⌐
1 2 5 4 3 1	
1 3 2 4 5 1	
1 3 2 5 4 1	
1 3 4 2 5 1	
1 3 5 2 4 1	
1 4 3 2 5 1	
1 4 2 3 5 1	

Exam 2   12 probs @ 10 pts each

40 pts = 100%

10.1 Graphs and Models (2 probs)

① (in parts) Type?

(a)

pseudograph

b)

mixed
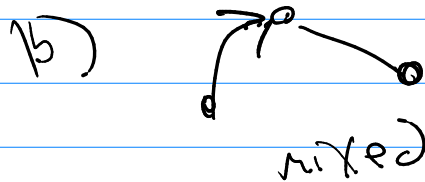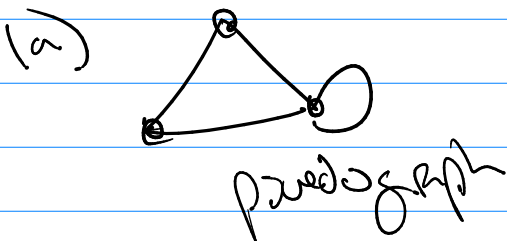
(ii) Application → graph

> 10.2 — (Terms) and special simple graphs (2 probs)

(1) ∝ deg, deg+, deg-, |V|, |E|, thⁿ

[ex] draw C_3H_y and what are the degrees of each vertex and show Handshake thⁿ applies.

(2) Is a graph bipartite? (Yes? ⇒ draw it as bipartite)

> 10.3 — Isomorphic (2 probs)

(1)
(2) } Are the graphs isomorphic?

→ Yes? Find isomorphism and show
$$A_{G_1} = A_{G_2} \text{ in isomorphic order}$$

⇒ No? Broken Invariant

> 10.4 — Connectivity (2 probs)

(1) undirected graph: connected?, cut vertex?, cut edge?, edge cut?, vertex cut?, κ, λ

② directed graph: strongly ⓢ weakly connected.

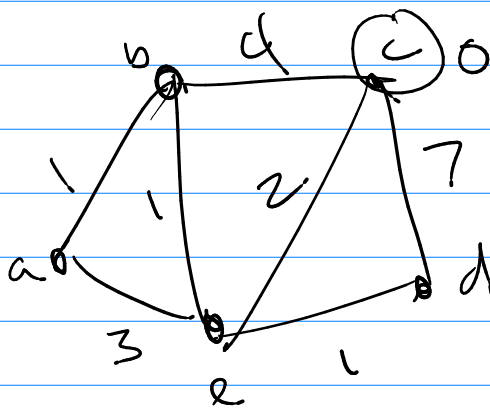⑩.⑤ Euler / Hamilton Paths and Circuits (3 prbs)

① cut puzzle

② Euler Path / Circuit Problem } Know the
③ Hamilton Circuit Problem   } this's

⑩.⑥ Shortest Path (1 problem)

① Dijkstra's Algorithm

b —q— c⃝ 0
1 2 7
a   d
3 e l

all shortest paths starting
at c.

Vertex	path	cost
c	c	0
e	c,e	2
etc		