Problems to be discussed in Tutorial I of 344.

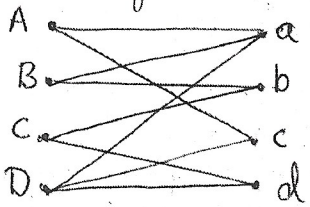
Textbook 1.1

2 (a) Suppose 4 teams, the Aces, the Birds, the Cats & the Dogs, play each other once.
The Aces beat all 3 opponents except Birds.
The Birds lost to all opponents except the Aces
The Dogs beat the Cats. Express these results as a graph.

b) A dominance order is a listing of teams such that i^{th} team beat the $i+1^{th}$ team. Find all such orders.

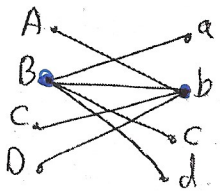
7. Find a matching or explain why one doesn't exist

(a)



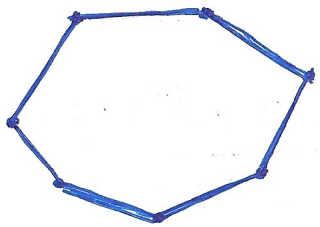
(a) $A \to c$
$B \to b$
$C \to d$
$D \to a$

(b)



No

24. What is the largest independent set in a circuit of length 7? of length n?

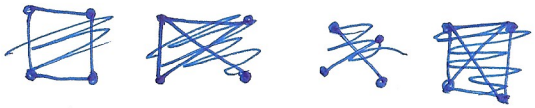


$2k > 7 \Rightarrow k \geq 3.5 \Rightarrow k \geq 4.$

$|V| = 7 \quad |C| = 4$

$|I| = 7 - 4 = 3.$

form: $2k > n$, $k > \frac{n}{2} \Rightarrow \begin{cases} k = \frac{n}{2} \\ k = \frac{n+1}{2} \end{cases}$

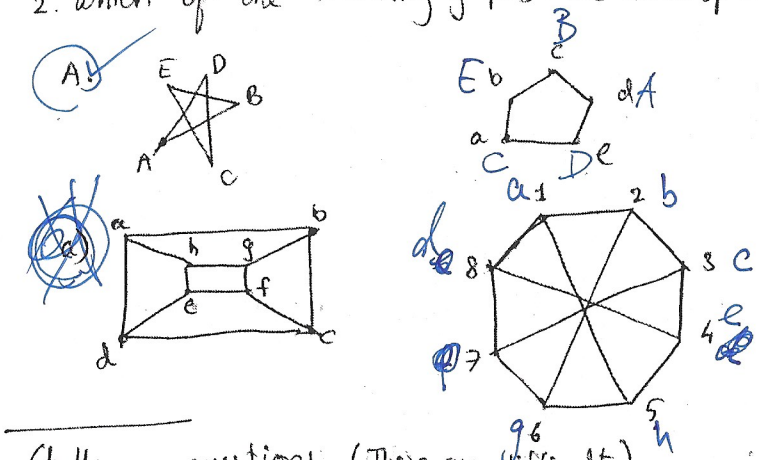


Textbook 1.2.

1. List all non isomorphic graphs with 4 vertices

2. Which of the following graphs are isomorphic.

(Not from text)



Challenge questions. (These are difficult)

1. 5 pairs of spouses (including you & your spouse) go to a party
a) Alice shook no ones hands (germophobe), Bob shook hands with only one person. Cleopatra shook hands with 3 people. Debra with four. Electra shook hands with 5 people & Farukh shook hands with 6 people. Gautam shook hands with 7 people & Himesh with 8.
(b) Obviously no one shook their spouse's hand at the party. Who is your spouse? (~~Not so difficult but next one is.~~)

~~2. People & their likes are~~

~~2. A math contest with 8 problems is written by 8 students. Each problem was solved by 5 students~~

2) Try & show sum of degrees of all points is always even. (in any graph)
Hint: How is this related to number of edges?