

M:13 Homework

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13.1.1

a.) m, n, l, p

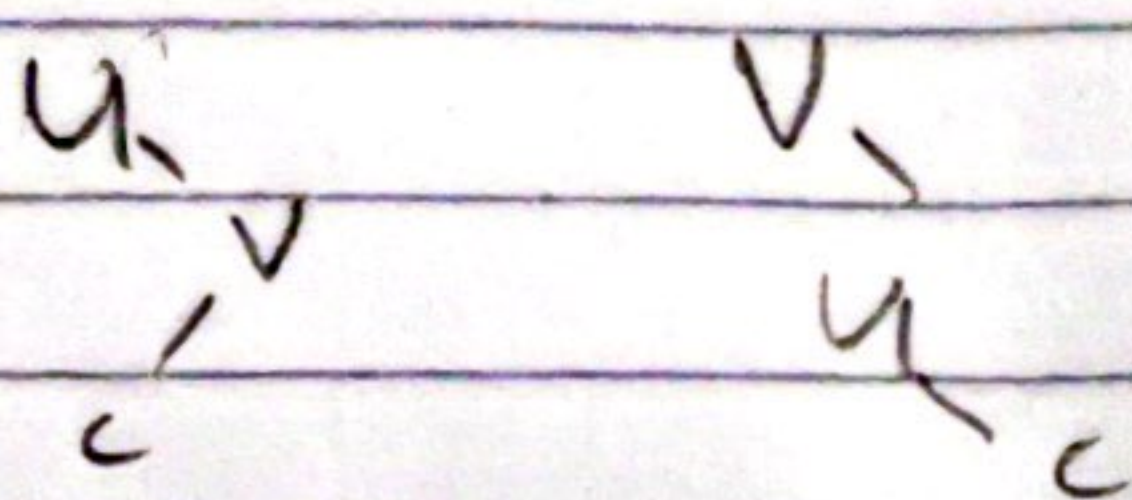
b.) f, g, e, d, a, b, c

c.) k, j, g, e, n, a, b, c, q

d.) 3

13.1.3.

a.



If both are ancestors then the path to reach this element will include both ancestors. Therefore u or v must be a descendant of the other.

13.2.1

a.)

0	0	
		x
x	0	x

0 wins

Leaves

0	0	
		x
x	0	x

0 wins

0	0	
		x
x	0	x

x wins

0	0	
0	x	x
x	0	x

0 wins

b.)

0	0	
		x
x	0	x

0 wins

0	0	x
x	x	0
x	0	x

x wins

0	0	
		x
x	0	x

0	0	
		x
x	0	x

0 wins

0	0	x
0	x	x
x	0	x

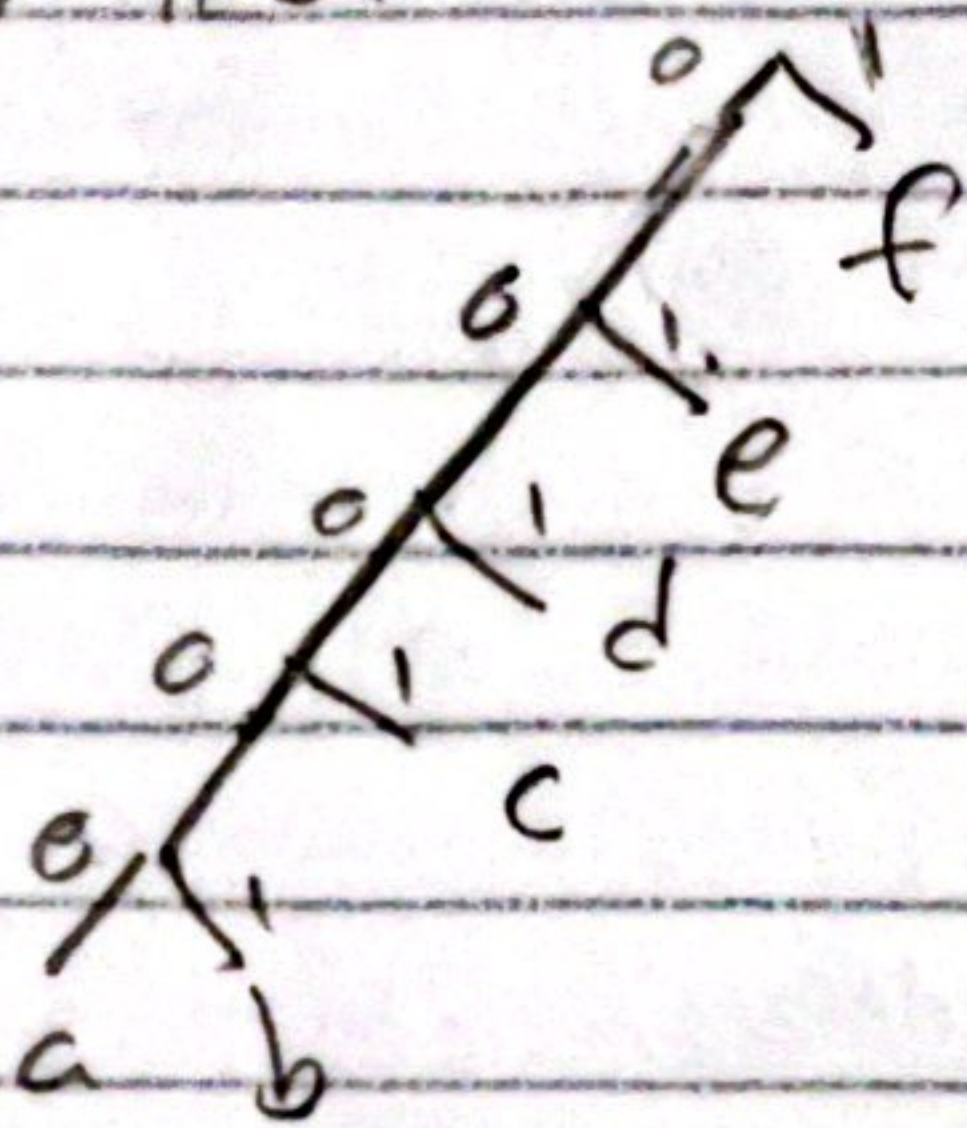
x wins

13.2.2

- a.) 111001111
- b.) 11000110111101111
- c.) den
- d.) dance

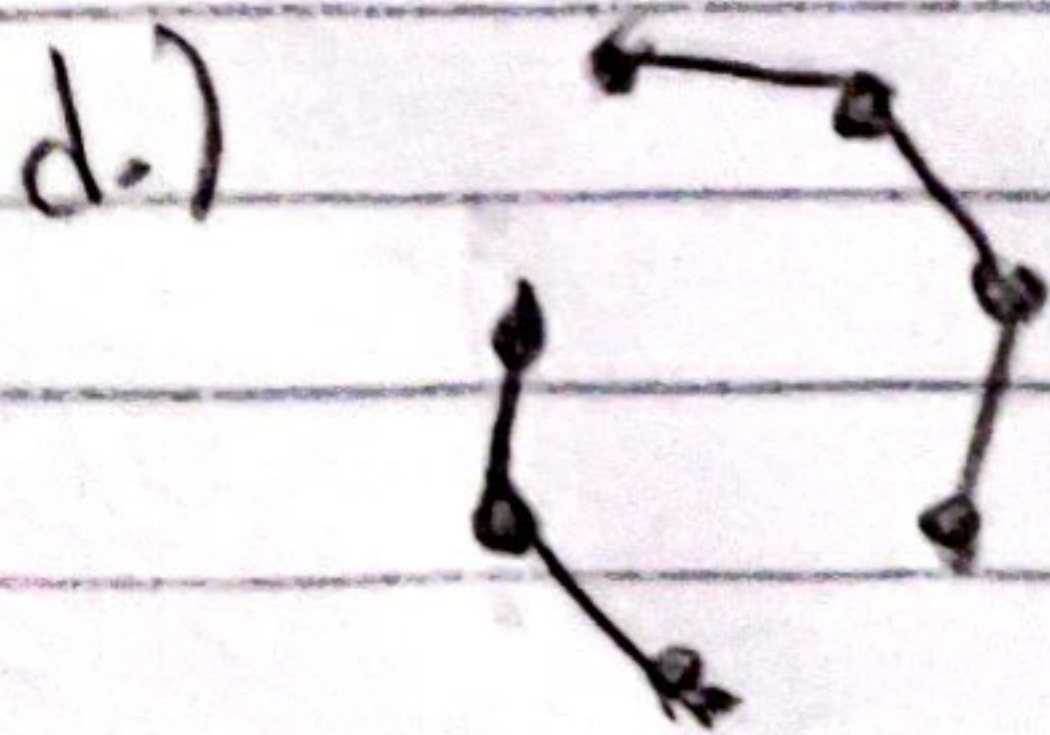
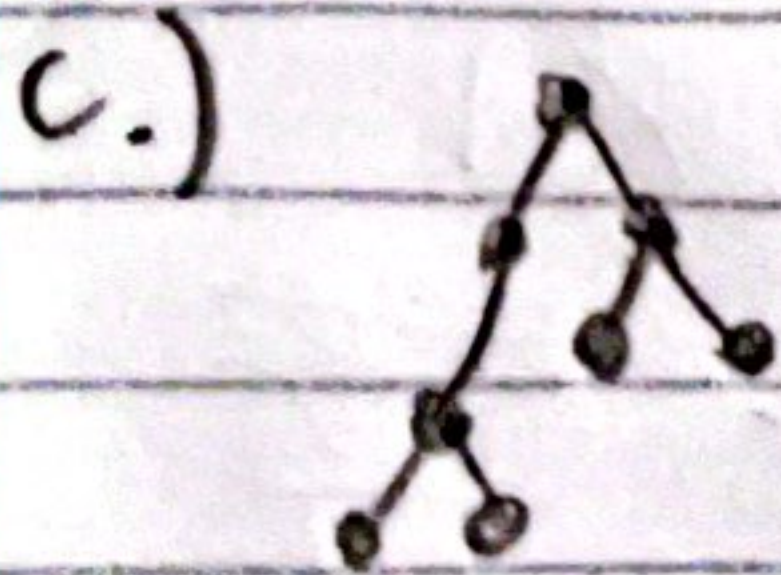
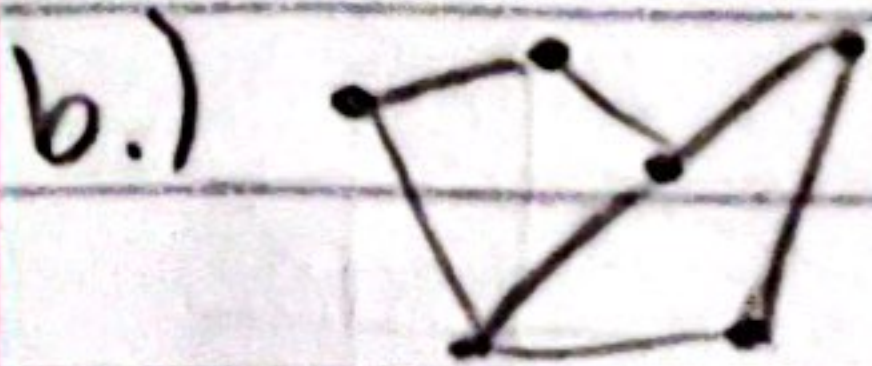
13.2.3

- a.) 2.9 $2 \cdot 0.05 + 2 \cdot 0.05 + 3 \cdot 0.15 + 3 \cdot 0.25 + 3 \cdot 0.3 = 2.9$
- b.) Yes.



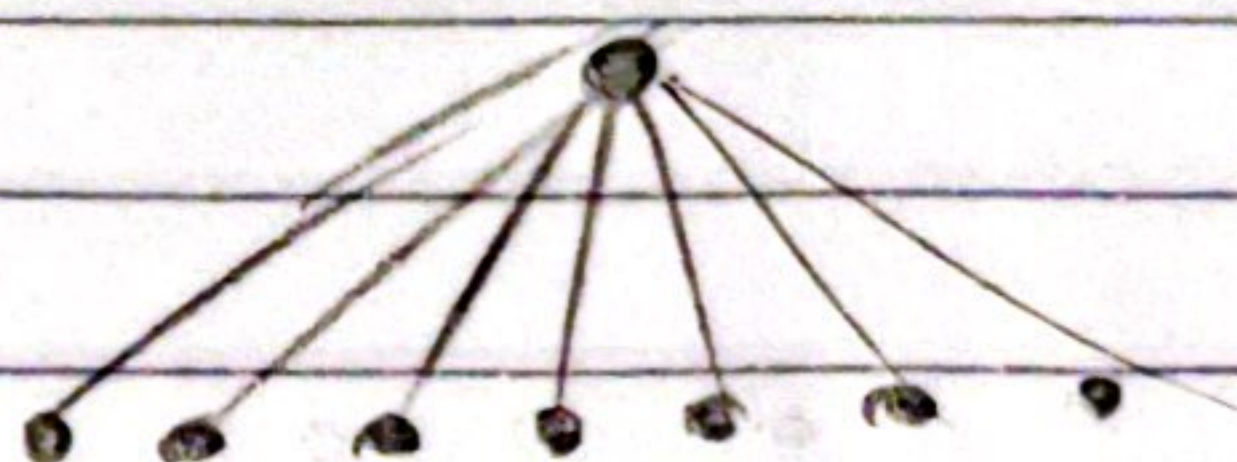
13.3.1

- a.) This cannot exist. One less edge = 6. And 6 < 12
12 is less than 14



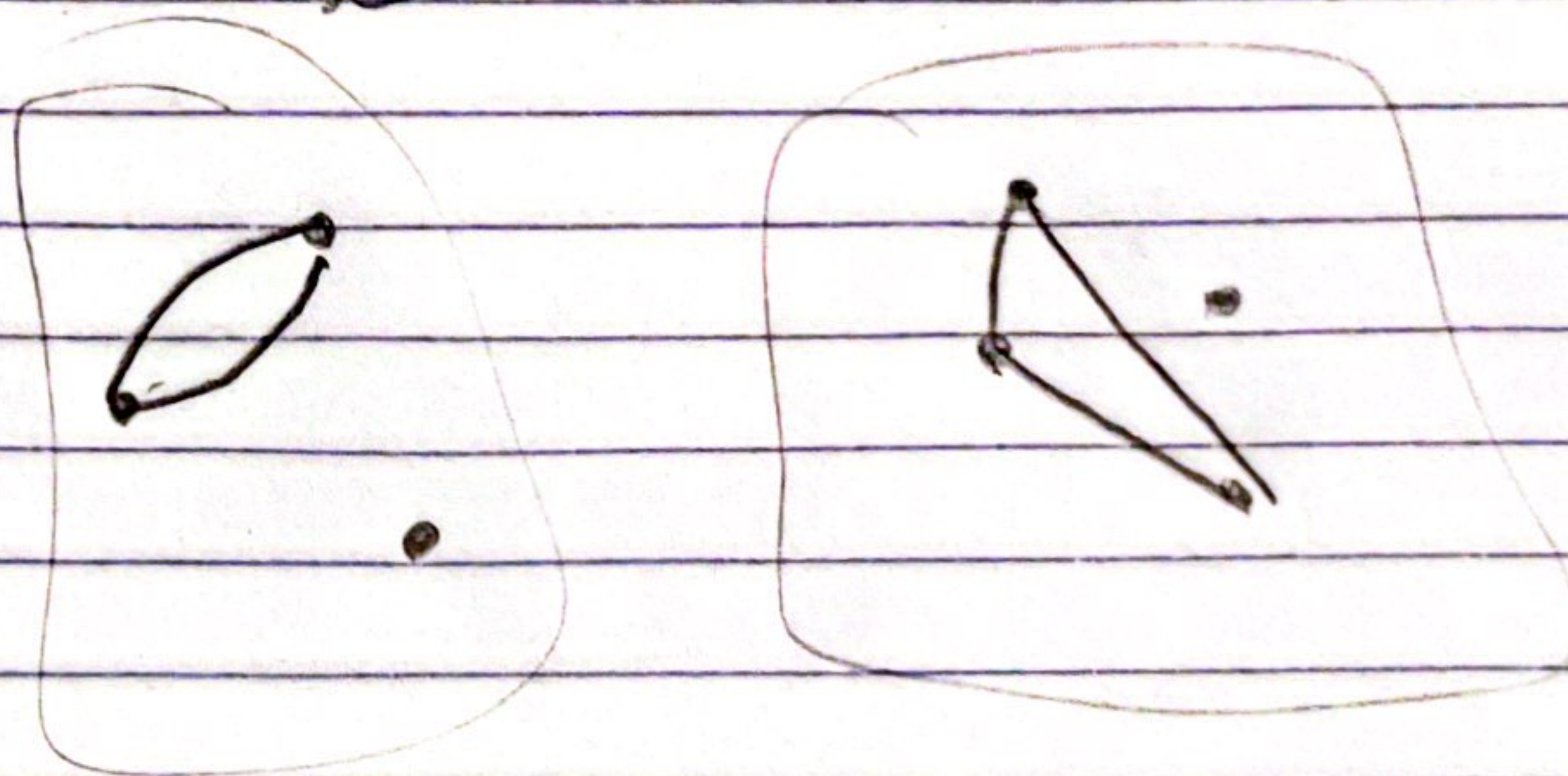
13.3.2

a.) $(n-1)^2 \rightarrow$ just make all nonorigin vertices a leaf



13.3.3

a.) No, there could be an isolated vertex or a disconnected graph.



13.3.5

a.) It is impossible to connect them. Take $n=2$.
 $n-2$ edges $= 0$. The maximum number of edges is 0, therefore it is impossible.

13.4.1

a.) f: h e b g c a d

b.) d f b i h e a c g