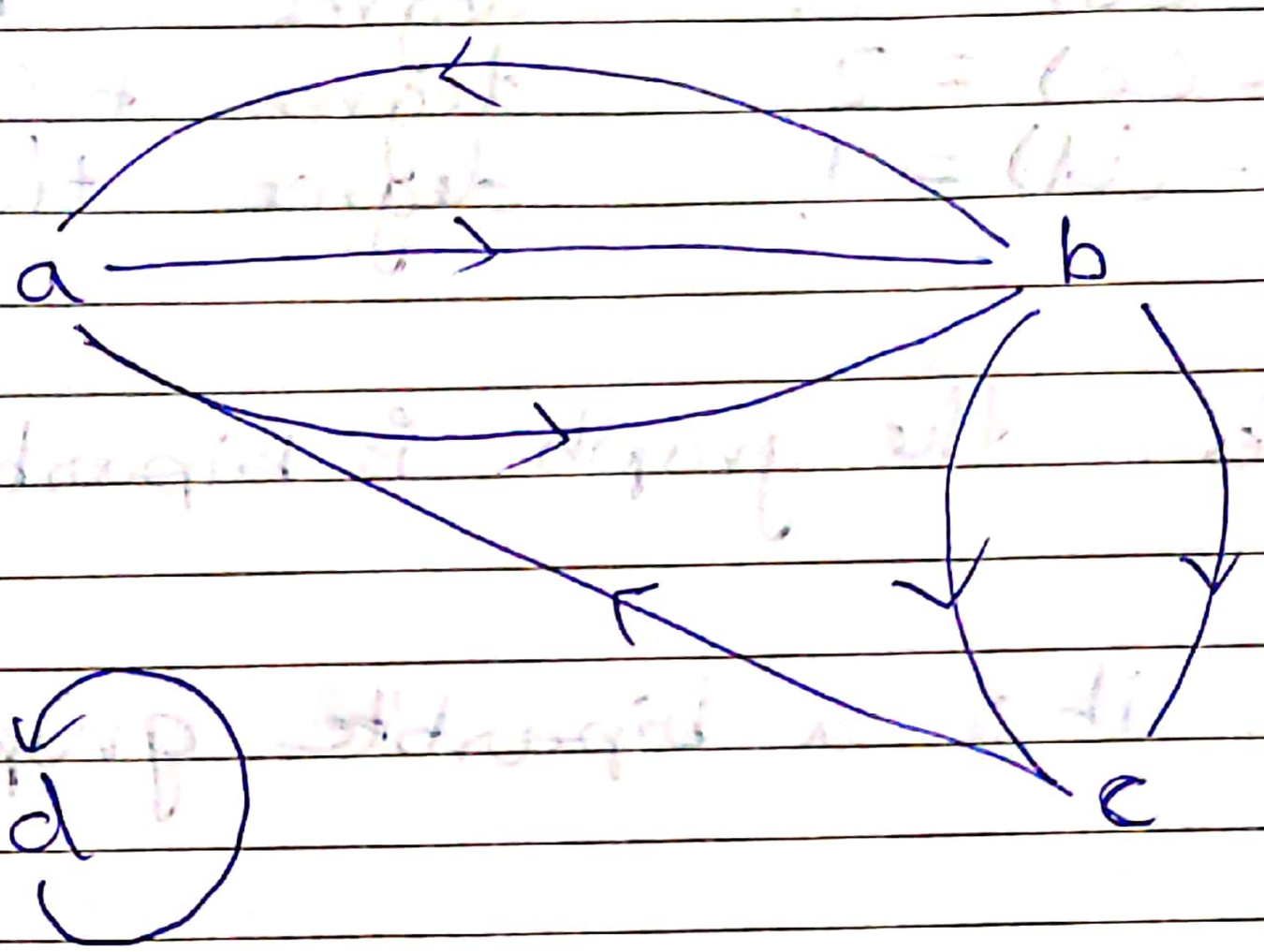
PS Tutorial 7.

PG-43. Jayram Modi. 6th September 2020.

Q1.

(a)

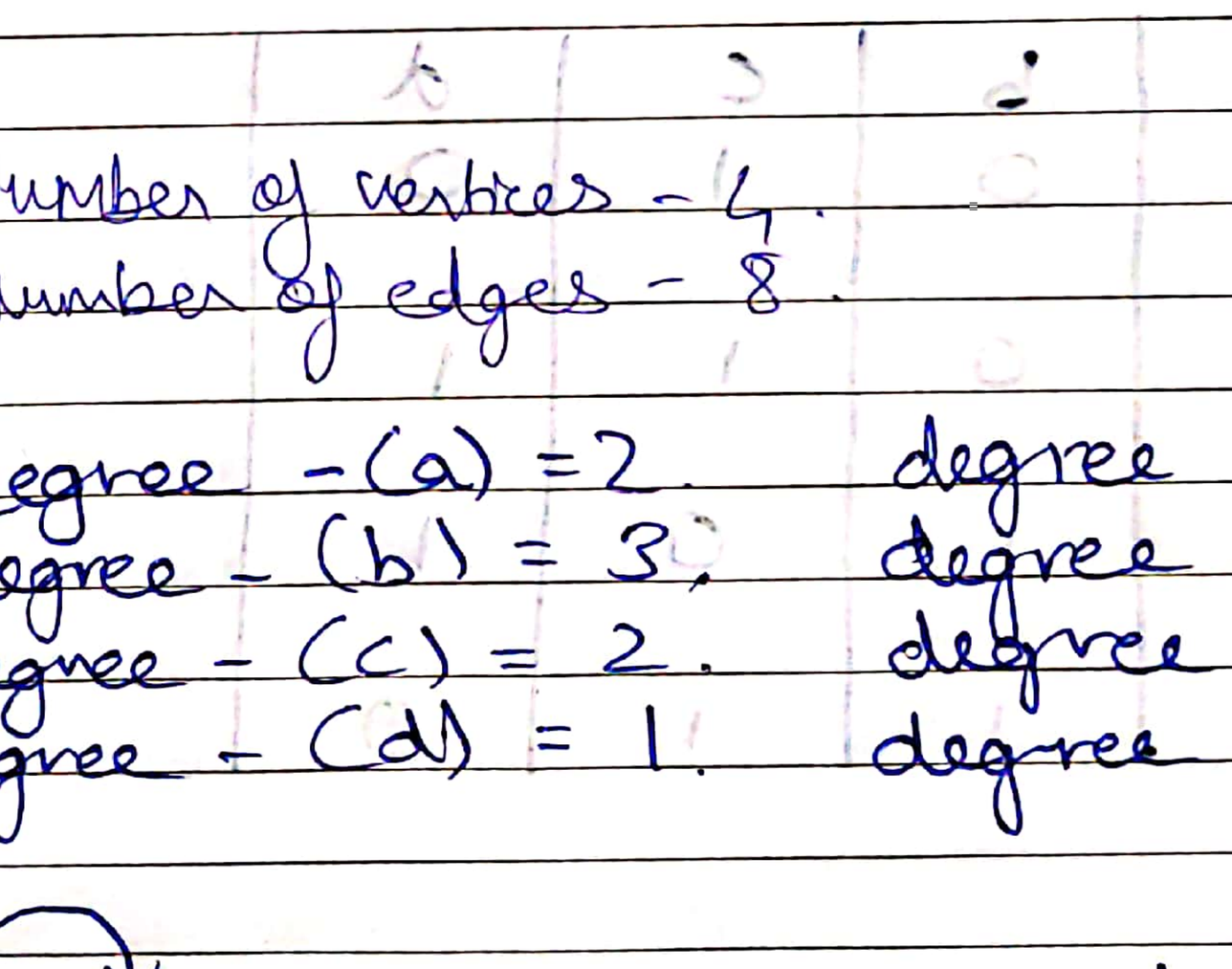



Number of vertices - 4.
Number of edges - 8.

degree - (a) = 2.
degree - (b) = 3.
degree - (c) = 2.
degree - (d) = 1.

degree + (a) = 2
degree + (b) = 4.
degree + (c) = 1.
degree + (d) = 1.

(b)



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Number of vertices = 4.
Number of edges = 7.

degree - (a) = 3.
degree - (b) = 1.
degree - (c) = 2.
degree - (d) = 1.

degree + (a) = 1.
degree + (b) = 2.
degree + (c) = 1.
degree + (d) = 3.

2. (a) Yes, the graph is bipartite.

(b) Yes, it is a bipartite graph.

3. (a)

| | a | b | c | d |
|---|---|---|---|---|
| a | 0 | 0 | 1 | 0 |
| b | 0 | 0 | 1 | 1 |
| c | 1 | 1 | 0 | 1 |
| d | 0 | 1 | 1 | 0 |

(b)

| | a | b | c | d |
|---|---|---|---|---|
| a | 0 | 1 | 0 | 1 |
| b | 1 | 0 | 1 | 0 |
| c | 0 | 1 | 0 | 1 |
| d | 1 | 0 | 1 | 0 |

4.

for graph 1, in degree of

$V_1 = 0$, $V_2 = 2$, $V_3 = 1$, $V_4 = 1$.

for graph 2, in degree of

$V_1 = 1$, $V_2 = 1$, $V_3 = 0$, $V_4 = 2$.

for graph 1, out degree of

$V_1 = 2$, $V_2 = 0$, $V_3 = 1$, $V_4 = 1$

for graph 2, out degree of

$V_1 = 1$, $V_2 = 1$, $V_3 = 2$, $V_4 = 0$.

since number of edges, vertices & degree are same, They are <u>isomorphic</u>.