MATH 239 — Assignment 1, Question 2

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a) I am mapping the vertices of graph G onto graph H

x	$f(x)$
1	P
2	R
3	O
4	D
5	U
6	C
7	T
8	I
9	V
10	E
11	L
12	Y

b) We see that in graph H, there exist five vertices of degree 3. For these five vertices, we see that:

- Vertex O has neighbours with degree {3, 3, 4}
- Vertex T has neighbours with degree {3, 4, 5}
- Vertex E has neighbours with degree {2, 3, 3}
- Vertex L has neighbours with degree {3, 3, 5}
- Vertex Y has neighbours with degree {2, 3, 4}

Now, in graph J, we see that vertex f is also degree 3; however, the respective degrees of its neighbours are {2, 3, 5}, which is not found for any third-degree vertex in graph H, thus H and J are non-isomorphic.