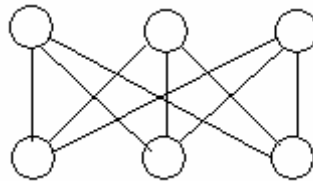


CS2022/MA2201
HW#8

DUE: Tuesday, October 16

1. (5 points) Do **Exercise 6.5.2** (the second Exercise on pg. 413) of our text.
2. (3 points) Do **Exercise 6.5.12** of our text.
3. (12 points) A graph is a *cubic graph* if it is simple and every vertex has degree 3.
a Draw a cubic graph with 7 vertices, or else prove that there is none.
b Draw a cubic graph with 6 vertices that is not isomorphic to $K_{3,3}$ or else prove that there is none, where $K_{3,3}$ is:



- c** Draw a cubic graph with 8 edges, or else prove that there is none.
4. (1 point) Do **Exercise 7.3.34** of our text, and justify your response.
5. (1 point) Do **Exercise 7.3.36** of our text, and justify your response.
6. (7 points) Prove or give a counterexample to the following:
CONJECTURE: For any simple graph $G = (V, E)$ with $|V| \geq 2$, at least two distinct vertices of G must have the same degree, that is,
$$(\exists u, v \in V)(u \neq v \wedge \deg(u) = \deg(v)).$$