Discrete Mathematics, 2016 Spring - Worksheet 24

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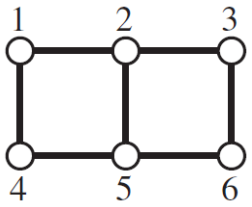
In all of the above problems explain your answer in full English sentences.

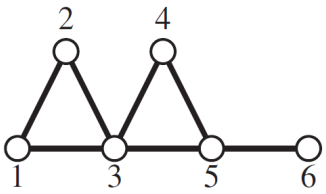
1. The following picture represents a graph. Please write it as a pair of set (V, E).



2. Draw a picture of the following graph.

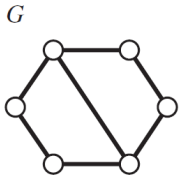
$$(\{a, b, c, d, e\}, \{\{a, b\}, \{a, c\}, \{a, d\}, \{b, e\}, \{c, d\}\})$$

3. Let G be a graph in the figure. Draw pictures of the following subgraphs.



   (a) $G - \{3\}$.
   (b) $G - \{5, 6\}$
   (c) $G[\{2, 4, 6\}]$
   (d) $G[\{1, 2, 4, 5\}]$.

4. Let G be the graph in the picture.



   (a) Draw the complement graph $\bar{G}$.
   (b) Find $\alpha(G)$ and $\omega(G)$.

5. Prove the following proposition. (Proposition 48.13)

   Proposition 1. *Let G be a graph with at least six vertices. Then $\omega(G) \geq 3$ or $\omega(\bar{G}) \geq 3$.*