Name: ________________
MATH55 Section ___
Homework 14
Due Tue. 4/4

48.7 Suppose that G is a subgraph of H. Prove or disprove:
a. $\alpha(G) \leq \alpha(H)$
b. $\alpha(G) \geq \alpha(H)$
c. $\omega(G) \leq \omega(H)$
d. $\omega(G) \geq \omega(H)$

48.11(c) Recall the definition of graph isomorphism from Exercise 47.21. We call a graph G *self-complementary* if G is isomorphic to $\overline{G}$.

c. Prove that if a self-complementary graph has n vertices, then $[n] = [0]$ or $[n] = [1]$ in $Z/4Z$.

Definition of isomorphism from exercise 47.21: We say that G is isomorphic to H provided there is a bijection $f : V(G) \to V(H)$ such that for all $a, b \in V(G)$ we have $a \sim b$ (in G) if and only if $f(a) \sim f(b)$ (in H). The function f is called an isomorphism of G to H.

48.12 Find a graph G on five vertices for which $\omega(G) < 3$ and $\omega(\overline{G}) < 3$. This shows that the number six in Proposition 48.13 is best possible.

48.14(g) Let $n, a, b \geq 2$ be integers. The notation $n \to (a, b)$ is an abbreviation for the following sentence: Every graph G on n vertices has $\alpha(G) \geq a$ or $\omega(G) \geq b$.

For example, Proposition 48.13 says that if $n \geq 6$, then $n \to (3, 3)$ is true. However, Exercise 48.12 asserts that $5 \to (3, 3)$ is false.

g. Suppose $a, b \geq 3$. If $n \to (a-1, b)$ and $m \to (a, b-1)$, then $(n+m) \to (a, b)$.