MA 442 - Fake Quiz

January 21

Name: _____ **BUID:** _____

Solve **one** of the following two questions.

Question 1. Consider the vector space

$$V = \mathcal{F}(\{0, 1, 2\}, \mathbb{R})$$

of all functions from the three element set $\{0, 1, 2\}$ to the real numbers. (We defined the vector space structure in discussion.) Consider the functions $f, g, h \in V$ defined by $f(t) = t+1, g(t) = t^3 - 3t^2 + 3t + 1, h(t) = 2t + 2$.

(a) Show that $f = g$ in V.

(b) Show that $f + g = h$ in V.

Question 2. Let V be the set of all functions $f : \mathbb{R} \to \mathbb{R}$ such that $f(1) = 0$. Show how V can be given the structure of a vector space. (You must define addition and scalar multiplication and then justify the axioms of a vector space.)