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~~E. Formulate a definition for *proper subset*:~~

~~Given $A, B \in \{$ sets $\}, (A \subset B \Leftrightarrow ($ $))$~~

15. ~~Take Advantage of Advantage of Quiz #2; post the resulting document on the appropriate *Canvas Assignment* link.~~

16. ~~Complete the following assignment prior to Meeting #3:~~

A. Study Jim's sample responses to Quiz #02's prompts; study your notes from today's meeting.

B*. Examine each of the following propositions, determine whether or not it is true, display your choice by circling either "T" or "F"; for each write at least two sentences that explains why you decided that the proposition is true or why you decided that the proposition is false (Please post the resulting document (as a PDF file) on the indicated *Assignment* link of *Canvas*.) :

i. $\{\sqrt{3}\} \in \mathbb{R}$

T F

The $\sqrt{3}$ is in all reals, The set consisting of $\sqrt{3}$ is not in all reals.

ii. $\sqrt{3} \in \{$ sets $\}$

T F

$\sqrt{3}$ is a number. Numbers alone are not a set.

iii. $\{\sqrt{3}\} \in \{$ sets $\}$

T F

The set of $\{\sqrt{3}\}$ is a legal set. It ~~is~~ also a set in {sets}.

iv. $\sqrt{3} \in (-\infty, \infty)$

T F

Because $(-\infty, \infty) \in \mathbb{R}$, $\sqrt{3}$ is in all Reals. This was proved above

v. $\exists!\, x \in \mathbb{R} \ni x^2 < x$

T F

$.16, \sqrt{.16} = .4$

$.4 \neq \sqrt{.4} = .63$

There exist $x \in \mathbb{R} \ni x^2 < x$, but there are multiple values that satisfy this. Therefore, $\exists!$ is not satisfied.

vi. $[\,0, 36\,] \subseteq \{\, n^2 : n \in \mathbb{Z} \,\}$

T F

$6.76 \in [0, 36]$, but $6.76 \notin \mathbb{Z}$.

Therefore, $[0, 36] \subseteq \{n^2 : n \in \mathbb{Z}\}$.

vii. $\{\, \mathbb{Q} \,\} \subseteq \mathbb{Q}$

T F

$\mathbb{Q}$ is the set of all rational #'s. There is one set of rational #'s. Therefore, $\{\mathbb{Q}\} \subseteq \mathbb{Q}$.

viii. $\mathbb{Q} \subseteq \mathbb{Q}$

T F

From the glossary, $A, B \in \{\text{sets}\}, (A \subseteq B \leftrightarrow (x \in A \to x \in B))$.

Therefore, $x \in \mathbb{Q} \to x \in \mathbb{Q}$.

ix. $\emptyset \subseteq \mathbb{Q}$

T F

The empty set is an element in every set. Because $\mathbb{Q}$ is a set, $\mathbb{Q}$ contains the empty set $\emptyset$.

X. $\{n^2 : n \in \mathbb{Z}\} \subset \omega$

T F

$\{n^2 : n \in \mathbb{Z}\} = \{0, 1, 4, 9, 16, ...\}$

$\omega = \{0, 1, 2, 3, 4, 5, 6, ...\}$

ω contains every element in $\{n^2 : n \in \mathbb{Z}\}$, but it also contains elements not in $\{n^2 : n \in \mathbb{Z}\}$. Therefore, $\{n^2 : n \in \mathbb{Z}\} \subset \omega$.