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Math 5710 Tuesday, 6/23/20 Quiz 02

1. What is your name?

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2. Write two sentences that explain why the following proposition is true:

$$V = \mathbb{R} \wedge i^2 = -1 \Rightarrow \{ 4 - 0.33i, \sqrt[4]{-17.1} \} = \varnothing$$

Since our universe is all reals, no imaginary numbers exist. The set $\{4-.33i, \sqrt[4]{-17.1}\}$ has 2 elements, but since both are imaginary, the set is just $\{\}$ or $\varnothing$.

3. Write two sentences that explain why the following proposition is true:

$$V = \mathbb{C} \wedge i^2 = -1 \Rightarrow \{ 4 - 0.33i, \sqrt[4]{-17.1} \} \neq \varnothing$$

Since our universe is the set of complex numbers, imaginary numbers exist. The set $\{4-.33i, \sqrt[4]{-17.1}\}$ has 2 imaginary numbers, and therefore, the set $\{4-.33i, \sqrt[4]{-17.1}\} \neq \varnothing$.

4. Write two sentences that explain why the following proposition is true:

Given that V = { everything }, the following set has exactly 5 elements:

$$\{ 1+2, \sqrt{9}, 9^{1/2}, 0, \mathbb{R}, \text{“3”}, \varnothing \}$$

$\{3, 3, 3, 0, \mathbb{R}, 3, \varnothing\}$

$\{3, 0, \mathbb{R}, 3, \varnothing\}$

The first 3 entries in the set are actually one element. Simplified, shown above, there are 5 elements.

5. Smile.