

Name: _____

CompID: _____

CS 2102 - DMT1 - FALL 2019 — LUTHER TYCHONIEVICH
ADMINISTERED IN CLASS FRIDAY OCTOBER 4, 2019

QUIZ 05

Throughout this quiz, use quotes to delimit the ends of strings.

Write out the following in full.

- $\{4, 1\} \times \{1, 2\} =$ _____
- $\{4\} \times \{1, 2\} \times \{3\}^3 =$ _____
- $\mathcal{P}(\{\})^2 =$ _____
- Give two strings of length 3 belonging to {"a", "ok"}*: _____ and _____
- What is the longest subsequence* of "MATHEMATICS" that contains no vowels[†]? _____
- What is the image of $\{-1, 0, 1, 2\}$ under $R(x) = x^2$? _____

For the following, assume the domain and codomain are \mathbb{N} (i.e., the functions are defined only if both are in \mathbb{N} , and undefined for all other values)

- Give an example function that is not total: $f(x) =$ _____
- Give an example function that is total but not invertible: $f(x) =$ _____
- Give the relation corresponding to the function $f(x) = 3x$: $R(a, b):$ _____
- Give an example relation that is not a function: $R(x, y) =$ _____

*A **subsequence** is a sequence that can be derived from another sequence by deleting zero or more elements without changing the order of the remaining elements.

[†]The vowels in English are a, e, i, o, and u