

Quiz 1: September 30, 2021

Name: Solution Key

Student ID: \_\_\_\_\_

1. (4 points) Suppose that  $|A| = m$  and  $|B| = n$ , give the following cardinalities:

(a)  $|\mathcal{P}(\mathcal{P}(\mathcal{P}(A)))|$

a)  $2^{2^{2^m}}$

(b)  $|\mathcal{P}(A \times B)|$

b)  $2^{m*n}$

2. (6 points) If  $A = \{1, 2\}$ ,  $B = \{z\}$ , give the power sets of  $A$ ,  $B$ , and  $A \times B$

$$P(A) = \{\emptyset, \{1\}, \{2\}, \{1, 2\}\}$$

$$P(B) = \{\emptyset, \{z\}\}$$

$$P(A \times B) = \{\emptyset, \{(1, z)\}, \{(2, z)\}, \{(1, z), (2, z)\}\}$$