

MATH 55 - WORKSHEET 1 (FRIDAY)

1 What is the cardinality of the following sets:

a $\{a\}$

b $\{\{a\}\}$

c $\{a, \{a\}\}$

2 Let $A = \{a, b, c, d\}$ and $B = \{y, z\}$. Find

a $A \times B$

b $B \times A$

c B^2 (this is defined to be $B \times B$)

2 Use the set builder notation and logical equivalences (similar to what I did in class, for the De-Morgan law) to prove the distributive law: $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$.

3 Find $\bigcup_{i=1}^{\infty} A_i$ and $\bigcap_{i=1}^{\infty} A_i$ if for every positive integer i ,

a $A_i = \{i, i + 1, i + 2 \dots\}$.

b $A_i = \{0, i\}$.

c $A_i = (0, i)$, that is, the set of real numbers x with $0 < x < i$.

d $A_i = (i, \infty)$, that is, the set of real numbers with $x > i$.