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CS 225

### 3.1 Set Notations

Asn 2.1: 7th edition = {8, 10, 14, 18, 20, 32}

8) a) No

b) no

c) yes

d) yes

e) yes

f) no

10) a) true

b) true

c) false

d) true

e) true

f) true

g) false

14) (I'm not sure how I can draw a picture so I will just describe how I think it should be)

Rectangle U to show the universe is U

inside U are three rings of circle, similar to a game of darts

the Inner most circle is A

The next circle is B, to denote that A is a subset of B

and the outer circle is C, to denote B is a subset of C

18) Since A is an element of set B, there exists an element in B that is A. Since A is a subset of b, this also means that all of the elements in the set A is one element inside of B. So to find a set that fulfills this requirement, an example could be:  $A = \{1,2,3\}$ ,  $B = \{1,2,3,\{1,2,3\},4,\{5\}\}$

20) a) 0

b) 1

c) 2

d) 3

32) Let  $a = \{a,b,c\}$ ,  $B = \{x,y\}$ ,  $C = \{0,1\}$

a)  $A \times B \times C = \{(a,x,0), (a,x,1), (a,y,0), (a,y,1), (b,x,0), (b,x,1), (b,y,0), (b,y,1), (c,x,0), (c,x,1), (c,y,0), (c,y,1)\}$

b)  $C \times B \times A$

$= \{(0,x,a), (0,x,b), (0,x,c), (0,y,a), (0,y,b), (0,y,c), (1,x,a), (1,x,b), (1,x,c), (1,y,a), (1,y,b), (1,y,c)\}$

c)  $C \times A \times B$

$= \{(0,a,x), (0,b,x), (0,c,x), (0,a,y), (0,b,y), (0,c,y), (1,a,x), (1,b,x), (1,c,x), (1,a,y), (1,b,y), (1,c,y)\}$

d)  $B \times B \times B$

$= \{(x,x,x), (x,x,y), (x,y,x), (x,y,y), (y,x,x), (y,x,y), (y,y,x), (y,y,y)\}$