Homework 3 Solutions

Ex 1, Page 125

a) $\{-1, 1\}$

b) $\{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11\}$

c) $\{0, 1, 4, 9, 16, 25, 36, 49, 64, 81\}$

d) $\{\}$ or $\emptyset$

Ex 2, Page 125

a) $\{x \mid x = 3i$, and x is a non-negative integer and $x < 13\}$

b) $\{x \mid -3 \leq x \leq 3, \; x \in \mathbb{Z}\}$

c) $\{x \mid x$ is a letter of the alphabet and $m \leq x \leq p\}$

Ex 5, Page 125

a) The two sets are equal since order and repetition don't matter

b) The two sets are not equal, the one contains 1 while the other does not

c) The two sets are not equal. The one has 1 element in it while the other one is empty

Ex 6, Page 125

$A = \{2, 4, 6\}$, $B = \{2, 6\}$, $C = \{4, 6\}$
$D = \{4, 6, 8\}$

$B \subseteq A$, $C \subseteq A$, $C \subseteq D$

Ex 7, Page 125

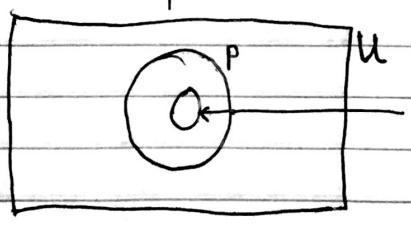
a) Yes
b) No
c) Yes
d) No
e) No
f) No

Ex 11, Page 125

a) True
b) True
c) False
d) True
e) True
f) False

Ex 12, page 125

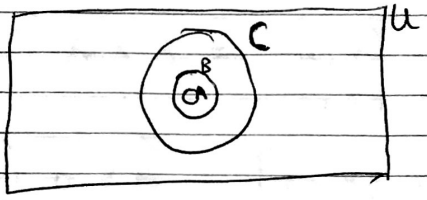
Let U be the set of all integers.
Let P: positive integers not exceeding 10



The subset of odd integers in the set of P

Exercise 14, Page 126

$A \subseteq B \qquad B \subseteq C$



Exercise 18, Page 126

$A \in B$ and $A \subseteq B$

let $A = \phi$ and $B = \{\phi\}$

Exercise 20, page 126

a) 0
b) 1
c) 2
d) 3

Exercise 21, page 126

a) $\mathcal{P}(\{a\}) = \{\phi, \{a\}\}$
b) $\mathcal{P}(\{a, b\}) = \{\phi, \{a\}, \{b\}, \{a, b\}\}$
c) $\mathcal{P}(\{\phi, \{\phi\}\}) = \{\phi, \{\phi\}, \{\{\phi\}\}, \{\phi, \{\phi\}\}\}$

Ex 27 , page 126

$A = \{a, b, c, d\}$, $B = \{y, z\}$

a) $A \times B = \{(a,y), (a,z), (b,y), (b,z), (c,y), (c,z), (d,y), (d,z)\}$

b) $B \times A = \{(y,a), (y,b), (y,c), (y,d), (z,a), (z,b), (z,c), (z,d)\}$