

§2-1 Homework Solutions

1) a) [BB] b) $\{1, -1, 3, -3, 5, -5, 15, -15\}$ c) [BB]

d) $\{-1, 0, 1, 2, 3\}$ (the set of all numbers reachable by adding one number from each set)

e) \emptyset (there are no natural numbers that are < -4 and $> +4$)

3) a) [BB] b) $\emptyset, \{1\}, \{2\}, \{1, 2\}$ c) The 12 subsets not listed in a)

d) The 12 subsets not listed in b) e) $\{1, 2, 3\}, \{1, 2, 4\}, \{1, 2, 3, 4\}$

f) $\emptyset, \{1\}, \{2\}$

7) a) True b) True (\emptyset is a subset of every set) c) False d) True

e) [BB] f) False g) True h) [BB] i) True

10) a) \emptyset has 0 elements. $\mathcal{P}(\emptyset) = \{\emptyset\}$ has $2^0 = 1$ element.

$\mathcal{P}(\mathcal{P}(\emptyset)) = \{\emptyset, \{\emptyset\}\}$ has $2^1 = 2$ elements.

b) $\mathcal{P}(A)$ has 2 elements and $\mathcal{P}(\mathcal{P}(A))$ has $2^2 = 4$ elements.

11) [BB]