

Math 2001: PHW2

Due: January 27, 2016

1. Consider the set of positive integers which give a remainder of 3 when divided by 4. Give two different descriptions of this set using set-builder notation.
2. From the book do problems:
 - (a) 1.1.A (numbers 4, 8, 12, 16)
 - (b) 1.5.3
3. Give examples of the following, or explain why they do not exist.
 - (a) An infinite set with a finite number of subsets,
 - (b) A finite set with an infinite number of subsets,
 - (c) A finite set with the same number of subsets and elements.
4. Let A be a set, and let $B = P(A)$ be the power set of A . Is $A \in B$ or $A \subseteq B$? Justify your answer.
5. What is the number of subsets of the set $\{\{1, 2, 3\}, \{1\}, \{1, 4\}, \{1, 4, 5, \{1, 2\}\}, \{1, 2, 3, 4\}\}$?
6. What is the number of subsets of $\{a, b, c, d, e, f\}$ which all contain c ? Generalize by determining how many subsets of $\{1, 2, \dots, n\}$ contain 1.