Mathematical Proofs

Chapter 2 – Exercise solutions and notes

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2016

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## Section 1: Describing a Set

### Exercises

1. Which of the following are sets?
   1. 1, 2, 3 Not a set
   2. {1, 2}, 3 Not a set
   3. {{1}, 2}, 3 Not a set
   4. {1, {2,}, 3} Set
   5. {1, 2, a, b} Set
2. Let . Describe each of the following sets as , where p(x) is some condition on x.
3. Determine the cardinality of each of the following sets:
4. Write each of the following sets by listing its elements within braces.
5. Write each of the following sets in the form , where p(x) is a property concerning x.
6. The set can be described by listing its elements, namely . List the elements of the following sets in a similar manner.
7. The set of even integers can be described by means of a defining condition by . Describe the following sets in a similar manner.
8. Let .
   1. Describe the set A by listing its elements.
   2. Give an example of three elements that belong to B but do not belong to A.
   3. Describe the set C by listing its elements.
   4. Describe the set D in another manner.
   5. Determine the cardinality of the sets A, C and D.
9. For , let and . Determine C.
   1. (because