

## Introduction to Sets &amp; Cartesian Products

1. A **set** is

2. Some examples and typical notation

3. The **Cartesian Product** of two sets  $A$  and  $B$  is

4. Some examples and typical notation

5. List the **elements** in each set below and determine its **cardinality**.

(a)  $A = \{1, 2, \{a, b, c\}, \emptyset\}$

(b)  $A = \{x \in R : x^3 - x^2 = 6x\}$

(c)  $A = \{x \in Z : x^3 - x^2 = 6x\}$

6. Write each set in **set-builder** notation.

(a) The half-open interval of the real line:  $[2, 8)$ .

(b)  $\{-6, -3, 0, 3, 6, 9, 12, \dots\}$  (Assume the pattern continues.)

(c) The set of points in the  $xy$ -plane that lie on the graph  $y = x^2 + 1$ .

7. Sketch  $[0, 1]^3$