Homework 1

Section 1.1 Introduction to Sets # E, F, 2, 3, 4, 9, 12, 14, 16, 18, 28, 32, 33, 38, 40, 46, 50, G

E. Write each statement in English entirely in symbols.

   a. The set S is the set of all nonnegative, even integers.
   b. The set of polynomials of degree 2 with real coefficients.
   c. The set of real-valued functions of a real variable that contain the point $(3, \pi)$.
   d. The set of integers is a subset of the set of rational numbers.

F. Write each mathematical statement as a sentence in English.

   a. $A = \{\emptyset\}$
   b. $\mathbb{Z} \subseteq \mathbb{N}$

G. Construct a set A such that $\{1,2\}$ is **both** an element of A and a subset of A.

(This section has 18 problems. Each part of each problems is worth 1 points for a total of 22 points.)

Section 1.2 The Cartesian Product # 2, 8, 10, 12, 14, 18, C

C. Determine the cardinality or each set below.

   a. $\{0,1,2,3\} \times \{a, b, \{c,d\}, e, \emptyset\}$
   b. $(\{1,2,3,4\} \times \{1,2,3\}) \times \{1,2\}$

(This section has 7 problems. Each part of each problems is worth 1 points for a total of 15 points.)