1. Which of the following are sets? For each which is a set give the cardinality.
   (a) $A = \{1, 2, 3\}$
   (b) $B = \{1, \{2, 3\}\}$
   (c) $C = \{1, 2, 3\}$
   (d) $D = \{0, 2, 4, 6, ...\}$

2. Let $S = \{0, 1, 2, 3, 4, 5\}$. Describe each of the following sets as $\{x \in S \mid p(x)\}$ where $p(x)$ is some condition on $x$. There may be more than one way to do each so try to be as elegant as possible.
   (a) $A = \{0, 1, 2\}$
   (b) $B = \{2, 3, 5\}$

3. Let $S = \{0, 1, 2, 3, 4, 5\}$. Describe each of the following sets as $\{f(x) \mid x \in S \text{ and } p(x)\}$ where $f(x)$ is a function and $p(x)$ is some simple condition on $x$. There may be more than one way to do each so try to be as elegant as possible.
   (a) $A = \{0, 2, 4, 6, 8, 10\}$
   (b) $B = \{0, 2, 4, 6\}$

4. Explicitly list the elements using non-conditional set notation in each of the following sets. Use ellipses if necessary.
   (a) $A = \{n \in \mathbb{Z} \mid 5 < n \leq 10\}$
   (b) $B = \{x \in \mathbb{R} \mid x^2 + 6x = -5\}$
   (c) $C = \{x \in \mathbb{R} \mid x^2 + 3 = 0\}$
   (d) $D = \{5x + 3 \mid x \in \mathbb{Z}\}$