1. Explicitly list the elements using non-conditional set notation in each of the following sets. Use ellipses if necessary.

(a) \(A = \{n \in \mathbb{Z} \mid 5 < n \leq 10\}\)

\[\text{Solution:}\]

(b) \(B = \{x \in \mathbb{R} \mid x^2 + 6x = -5\}\)

\[\text{Solution:}\]

(c) \(C = \{x \in \mathbb{R} \mid x^2 + 3 = 0\}\)

\[\text{Solution:}\]

(d) \(D = \{5x + 3 \mid x \in \mathbb{Z}\}\)

\[\text{Solution:}\]

2. Determine if each of the following elements is in each set. Use \(\in\) or \(\notin\).

(a) Is 3 an element of \(\{2x + 11 \mid x \in \mathbb{Z}\}\)?

\[\text{Solution:}\]

(b) Is \(\mathbb{Z}\) an element of \(\mathbb{Z}\)?

\[\text{Solution:}\]

(c) Is \(\emptyset\) an element of \(\{\}, \{\}\)?

\[\text{Solution:}\]

(d) Is 5 an element of \(\mathbb{Q}\)?

\[\text{Solution:}\]

(e) Is 5 an element of \(\mathbb{C} - \mathbb{R}\)?

\[\text{Solution:}\]
3. List all the elements in $\mathcal{P}([0,1])$

   Solution:

4. Give an example of three sets $A$, $B$ and $C$ such that $A \in B$, $A \subseteq C$ and $B \not\subseteq C$.

   Solution:

5. Prove that:

   $$\left\{ x \in \mathbb{R} \mid |x + 3| = 5 - |x| \right\} = \{-4, 1\}$$