

# Sets I

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**2.1.4:** True or false?

- (a)  $5 \in \{\{5\}, \{6\}\}$
- (b)  $5 \in \{5, \{6\}\}$
- (c)  $\{5\} \in \{5\}$
- (d)  $\{5\} \subseteq \{5\}$
- (e)  $\{5\} \subseteq \{5, 6\}$
- (f)  $\{5\} \subseteq \{\{5\}, 6\}$

**2.1.6:** Give an example, if there is one, of sets  $A$ ,  $B$ , and  $C$  such that the following are true.

- (a)  $A \subseteq B$ ,  $B \not\subseteq C$ , and  $A \subseteq C$ .
- (b)  $A \subseteq B$ ,  $B \subseteq C$ , and  $C \subseteq A$ .
- (c)  $A \not\subseteq B$ ,  $B \not\subseteq C$ , and  $A \subseteq C$ .
- (d)  $A \subseteq B$ ,  $B \not\subseteq C$ , and  $A \not\subseteq C$ .
- (e)  $A \in B$ ,  $A \subseteq B$ , and  $B \subseteq C$ .

2.1.17: True or false?

- (a)  $\emptyset \in \mathcal{P}(\{\emptyset, \{\emptyset\}\})$
- (b)  $\{\emptyset\} \in \mathcal{P}(\{\emptyset, \{\emptyset\}\})$
- (c)  $\{\{\emptyset\}\} \in \mathcal{P}(\{\emptyset, \{\emptyset\}\})$
- (d)  $\emptyset \subseteq \mathcal{P}(\{\emptyset, \{\emptyset\}\})$
- (e)  $\{\emptyset\} \subseteq \mathcal{P}(\{\emptyset, \{\emptyset\}\})$
- (f)  $\{\{\emptyset\}\} \subseteq \mathcal{P}(\{\emptyset, \{\emptyset\}\})$
- (g)  $3 \in \mathbb{Q}$
- (h)  $\{3\} \subseteq \mathcal{P}(\mathbb{Q})$
- (i)  $\{3\} \in \mathcal{P}(\mathbb{Q})$
- (j)  $\{\{3\}\} \subseteq \mathcal{P}(\mathbb{Q})$