

(S - 2300 Chapter 2: Sections 1 & 2 Homework

Section 2.1: 2, 7, 8, 9, 19, 20, 22, 35

Section 2.2: 4, 15, 16, 32, 35

(13 problems)

Section 2.1

2) Use set builder notation to give a description of each of these sets:

a) $\{0, 3, 6, 9, 12\}$

b) $\{-3, -2, -1, 0, 1, 2, 3\}$

c) $\{m, n, o, p\}$

~~a) $\{x \mid x \text{ is an integer such that } x \text{ is greater than or equal to } 0, \text{ but less than or equal to } 12\}$~~

a) $\{x \mid 0, 3, 6, 9, 12\}$

Answer a)

$\{x \mid x \text{ is an integer that is a multiple of three such that } x \text{ is greater than or equal to } 0, \text{ but less than or equal to } 12\}$

b) $\{-3, -2, -1, 0, 1, 2, 3\}$

Answer b)

$\{x \mid x \text{ is an integer between } -3 \text{ and } +3, \text{ including } -3 \text{ and } +3\}$

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c) $\{m, n, o, p\}$

Answer c)

$\{x \mid x \text{ is a letter of the english alphabet between } m \text{ and } p, \text{ including } m \text{ and } p\}$

7. for each of the following sets, determine whether 2 is an element of that set.

Answers

- | | |
|--|-----|
| a) $\{x \in \mathbb{R} \mid x \text{ is an integer greater than } 1\}$ | Yes |
| b) $\{x \in \mathbb{R} \mid x \text{ is the square of an integer}\}$ | No |
| c) $\{2, \{2\}\}$ | Yes |
| d) $\{\{2\}, \{\{2\}\}\}$ | No |
| e) $\{\{2\}, \{2, \{2\}\}\}$ | No |
| f) $\{\{\{2\}\}\}$ | No |

8. for each of the sets in Exercise 7, determine whether the $\{2\}$ is an element of that set.

- | | |
|--------|--------|
| a) No | d) Yes |
| b) No | e) Yes |
| c) Yes | f) No |

9. Determine whether each of these statements is true or false.

- | | |
|--|-------|
| a) $\emptyset \in \emptyset$ | False |
| b) $\emptyset \in \{\emptyset\}$ | True |
| c) $\{\emptyset\} \subset \emptyset$ | False |
| d) $\emptyset \subset \{\emptyset\}$ | True |
| e) $\{\emptyset\} \in \{\emptyset\}$ | False |
| f) $\{\emptyset\} \subset \{\emptyset\}$ | True |
| g) $\{\{\emptyset\}\} \subset \{\emptyset\}$ | False |