

# 4.13

## Concept of a Function

### • Example 1

Given the set

$$A = \{(a, b), (1, c), (1, d), (2, 2), (b, d), (b, a)\}$$

find a relation  $C$  such that  $A \setminus C$  is a function defined on  $\{1, a, 2, b\}$ .

We take

$$C = \{(1, d), (b, a)\} \text{ so that}$$

$$A \setminus C = \{(a, b), (1, c), (2, 2), (b, d)\}$$

is a function defined on  $\{1, a, 2, b\}$

Note that this answer is not unique.

### ● ● ● CHECK YOURSELF 1

Given the set  $B = \{(1, b), (b, c), (2, c), (b, d)\}$  find a relation  $C$  such that  $B \setminus C$  is a function defined on  $\{1, b, 2\}$ .

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### ● ● ● CHECK YOURSELF ANSWER

1.  $C = \{(b, d)\}$ .

Note: This answer is not unique.

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# 4.13 Exercises

Name \_\_\_\_\_

Section \_\_\_\_\_

Date \_\_\_\_\_

## A N S W E R S

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_

In exercises 1–5, find a relation  $C$  such that  $A \setminus C$  is a function defined on the set of first elements in each set  $A$ .

1.  $A = \{(1, 2), (2, c), (3, b), (1, 3), (3, c)\}$

2.  $A = \{(a, d), (b, b), (b, c), (1, c), (3, a)\}$

3.  $A = \{(3, b), (4, 1), (5, a), (6, b), (1, 1)\}$

4.  $A = \{(0, 0), (0, 1), (1, 0), (2, 0), (0, 3)\}$

5.  $A = \{(a, 1), (a, 2), (a, 3), (a, 4), (a, 5)\}$

In exercises 6–10, find a relation  $C \subset A$  such that  $C$  is a function.

6.  $A = \{(b, d), (a, c), (c, a), (b, a), (c, b)\}$

7.  $A = \{(a, 2), (1, 3), (a, a), (2, b), (3, a)\}$

8.  $A = \{(1, 5), (2, 1), (0, 3), (4, 9), (6, 10)\}$

9.  $A = \{(c, c), (1, b), (2, c), (c, 2), (c, 3)\}$

10.  $A = \{(2, 1), (3, a), (2, b), (1, b), (2, 3)\}$