

# 4.11

## Inverse of a Relation

### • Example 1

Find the inverses of the following relations.

(a)  $F = \{(1, 3), (2, 4), (3, 9)\}$

Its inverse is

$$F^{-1} = \{(3, 1), (4, 2), (9, 3)\}$$

(b)  $G = \{(1, 3), (2, 6), (3, 6)\}$

Its inverse is

$$G^{-1} = \{(3, 1), (6, 2), (6, 3)\}$$

### ● ● ● CHECK YOURSELF 1

Write the inverses for each of the following relations.

a.  $\{(-1, 2), (0, 3), (1, 4)\}$

b.  $\{(2, 5), (3, 7), (4, 5)\}$

---

### ● ● ● CHECK YOURSELF ANSWER

1. (a)  $\{(2, -1), (3, 0), (4, 1)\}$ ; (b)  $\{(5, 2), (7, 3), (5, 4)\}$ .

---

# 4.11 Exercises

Name \_\_\_\_\_

Section \_\_\_\_\_

Date \_\_\_\_\_

## A N S W E R S

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_

Write the inverse of each relation.

1.  $\{(2, 3), (3, 4), (4, 5)\}$
2.  $\{(2, 3), (3, 4), (4, 3)\}$
3.  $\{(1, 2), (2, 2), (3, 2)\}$
4.  $\{(5, 9), (3, 7), (7, 5)\}$
5.  $\{(2, 4), (3, 9), (4, 16)\}$
6.  $\{(-1, 2), (0, 3), (1, 2)\}$
7.  $\{(1, 6), (7, 8), (4, 12), (2, 15)\}$
8.  $\{(1, 9), (1, 8), (1, 7), (1, 6)\}$
9.  $\{(1, -4), (2, -1), (3, 4), (4, 11)\}$
10.  $\{(-2, -8), (-1, -1), (0, 0), (1, 1), (2, 8)\}$
11.  $\{(-8, 1), (-1, 2), (18, 3)\}$
12.  $\{(13, -1), (3, 1), (-7, 3), (-17, 5)\}$