7.3 Simplifying a Product of Radical Expressions: Problem Type 1

• Example 1

Multiply.

(*a*) $(\sqrt{3} + 2)(\sqrt{3} + 5)$

$= \sqrt{3} \cdot \sqrt{3} + 5\sqrt{3} + 2\sqrt{3} + 2 \cdot 5$

$= 3 + 5\sqrt{3} + 2\sqrt{3} + 10$ Combine like terms.

$= 13 + 7\sqrt{3}$

(*b*) $(\sqrt{7} + 2)(\sqrt{7} - 2) = \sqrt{7} \cdot \sqrt{7} - 2\sqrt{7} + 2\sqrt{7} - 4$

$= 7 - 4 = 3$

(*c*) $(\sqrt{3} + 5)^2 = (\sqrt{3} + 5)(\sqrt{3} + 5)$

$= \sqrt{3} \cdot \sqrt{3} + 5\sqrt{3} + 5\sqrt{3} + 5 \cdot 5$

$= 3 + 5\sqrt{3} + 5\sqrt{3} + 25$

$= 28 + 10\sqrt{3}$

CHECK YOURSELF 1

Multiply.

a. $(\sqrt{5} + 3)(\sqrt{5} - 2)$ **b.** $(\sqrt{3} + 4)(\sqrt{3} - 4)$ **c.** $(\sqrt{2} - 3)^2$

CHECK YOURSELF ANSWER

1. (a) $-1 + \sqrt{5}$; **(b)** -13; **(c)** $11 - 6\sqrt{2}$.

7.3 Exercises

Name

Section Date

ANSWERS

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.

Multiply.

1. $(\sqrt{3} + 5)(\sqrt{3} + 3)$

2. $(\sqrt{5} - 2)(\sqrt{5} - 1)$

3. $(\sqrt{5} - 1)(\sqrt{5} + 3)$

4. $(\sqrt{2} + 3)(\sqrt{2} - 7)$

5. $(\sqrt{5} - 2)(\sqrt{5} + 2)$

6. $(\sqrt{7} + 5)(\sqrt{7} - 5)$

7. $(\sqrt{10} + 5)(\sqrt{10} - 5)$

8. $(\sqrt{11} - 3)(\sqrt{11} + 3)$

9. $(\sqrt{x} + 3)(\sqrt{x} - 3)$

10. $(\sqrt{a} - 4)(\sqrt{a} + 4)$

11. $(\sqrt{3} + 2)^2$

12. $(\sqrt{5} - 3)^2$

13. $(\sqrt{y} - 5)^2$

14. $(\sqrt{x} + 4)^2$