

7.3

Simplifying a Product of Radical Expressions: Problem Type 1

• Example 1

Multiply.

$$\begin{aligned}
 (a) \quad & (\sqrt{3} + 2)(\sqrt{3} + 5) \\
 & = \sqrt{3} \cdot \sqrt{3} + 5\sqrt{3} + 2\sqrt{3} + 2 \cdot 5 \\
 & = 3 + 5\sqrt{3} + 2\sqrt{3} + 10 \quad \text{Combine like terms.} \\
 & = 13 + 7\sqrt{3}
 \end{aligned}$$

$$\begin{aligned}
 (b) \quad & (\sqrt{7} + 2)(\sqrt{7} - 2) = \sqrt{7} \cdot \sqrt{7} - 2\sqrt{7} + 2\sqrt{7} - 4 \\
 & = 7 - 4 = 3
 \end{aligned}$$

$$\begin{aligned}
 (c) \quad & (\sqrt{3} + 5)^2 = (\sqrt{3} + 5)(\sqrt{3} + 5) \\
 & = \sqrt{3} \cdot \sqrt{3} + 5\sqrt{3} + 5\sqrt{3} + 5 \cdot 5 \\
 & = 3 + 5\sqrt{3} + 5\sqrt{3} + 25 \\
 & = 28 + 10\sqrt{3}
 \end{aligned}$$

• • • CHECK YOURSELF 1

Multiply.

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

• • • CHECK YOURSELF ANSWER

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

7.3 Exercises

Name _____

Section _____

Date _____

A N S W E R S

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