7.4 Simplifying a Product of Radical Expressions: Problem Type 2

• Example 1

Carry out the following multiplication and simplify

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

Following the procedure for multiplying binomials and simplifying, we have

$$\begin{aligned}(\sqrt{3} - 2\sqrt{5})(3\sqrt{3} + \sqrt{5}) &= 3(3) + \sqrt{3}\sqrt{5} - 6\sqrt{5}\sqrt{3} - 2(5)\\ &= 9 + \sqrt{15} - 6\sqrt{15} - 10\\ &= -1 - 5\sqrt{15}\end{aligned}$$

CHECK YOURSELF 1

Carry out the following multiplication and simplify

$$(\sqrt{5} - 2\sqrt{2})(4\sqrt{5} + 6\sqrt{2})$$

CHECK YOURSELF ANSWER

1. $-4 - 2\sqrt{10}$.

7.4 Exercises

Name

Section Date

ANSWERS

1.

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11.

12.

Carry out the multiplication and simplify each of the following.

1. $(\sqrt{3} - 2\sqrt{2})(5\sqrt{3} + \sqrt{2})$

2. $(\sqrt{6} + 4\sqrt{5})(2\sqrt{6} - 7\sqrt{5})$

3. $(3\sqrt{7} - \sqrt{10})(4\sqrt{7} + 12\sqrt{10})$

4. $(5\sqrt{2} + \sqrt{3})(\sqrt{2} + \sqrt{3})$

5. $(3\sqrt{6} - \sqrt{13})(6\sqrt{6} - 4\sqrt{13})$

6. $(\sqrt{29} + \sqrt{2})(3\sqrt{29} - 8\sqrt{2})$

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

8. $(\sqrt{5} - 2\sqrt{3})(8\sqrt{5} + 8\sqrt{3})$

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

10. $(2\sqrt{5} - 3\sqrt{3})(2\sqrt{5} + 3\sqrt{3})$

11. $(8\sqrt{3} + \sqrt{6})(8\sqrt{3} - \sqrt{6})$

12. $(\sqrt{119} + \sqrt{123})(\sqrt{119} - \sqrt{123})$