

Multiplying Radicals

Procedure: 1. Treat radicals like variables in polynomials and multiply.

Example:

Simplify $(2\sqrt{3} + 4)(3\sqrt{3} - 1)$.

$$\begin{aligned} (2\sqrt{3} + 4)(3\sqrt{3} - 1) &= (2\sqrt{3})(3\sqrt{3}) - 2\sqrt{3} + 4(3\sqrt{3}) - 4, \\ &= 6(\sqrt{3})^2 - 2\sqrt{3} + 12\sqrt{3} - 4, \\ &= 6(3) + 10\sqrt{3} - 4, \\ &= 18 + 10\sqrt{3} - 4, \\ &= 10\sqrt{3} + 14. \end{aligned}$$

Simplify the following.

1. $(4\sqrt{5})(5\sqrt{5})$

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

3. $(2\sqrt{6})(\sqrt{11})$

4. $(\sqrt{7} - 4)(\sqrt{10} + 1)$

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

6. $(2\sqrt{5} + 1)(\sqrt{3} + 10)$

7. $(4\sqrt{3} + 5)(3\sqrt{6} + 2)$

8. $(\sqrt{13} - 6)(\sqrt{2} - 3)$

9. $(2\sqrt{5} - 4)^2$