

Algebra 1

Chapter 10

Section 10-3

Simplify

$$9\sqrt{21} + 4\sqrt{21}$$

$$13\sqrt{21}$$

Simplify

$$14\sqrt{2} - \sqrt{50}$$

$$14\sqrt{2} - \sqrt{25}\sqrt{2}$$

$$14\sqrt{2} - 5\sqrt{2}$$

$$9\sqrt{2}$$

Simplify

$$\sqrt{28} + \sqrt{700} - \sqrt{63}$$

$$\sqrt{4}\sqrt{7} + \sqrt{100}\sqrt{7} - \sqrt{9}\sqrt{7}$$

$$2\sqrt{7} + 10\sqrt{7} - 3\sqrt{7}$$

$$9\sqrt{7}$$

Multiply

$$\begin{aligned} & \sqrt{10}(\sqrt{10} - \sqrt{2}) \\ & \sqrt{100} - \sqrt{20} \\ & 10 - \sqrt{4}\sqrt{5} \\ & 10 - 2\sqrt{5} \end{aligned}$$

$$9\sqrt{5}(2 + 4\sqrt{2})$$

$$18\sqrt{5} + 36\sqrt{10}$$

Multiply

$$\begin{aligned} & (1 - \sqrt{3})(\sqrt{21} + 4) \\ & \sqrt{21} + 4 - \sqrt{63} - 4\sqrt{3} \\ & \quad \quad \quad \sqrt{9}\sqrt{7} \\ & \sqrt{21} + 4 - 3\sqrt{7} - 4\sqrt{3} \end{aligned}$$

$$\begin{aligned} & (\sqrt{11} + 7)^2 \\ & (\sqrt{11} + 7)(\sqrt{11} + 7) \\ & 11 + 7\sqrt{11} + 7\sqrt{11} + 49 \\ & 14\sqrt{11} + 60 \end{aligned}$$

Review

Take note

Key Concept The Product of a Sum and Difference

Words The product of the sum and difference of the same two terms is the difference of their squares.

Algebra

$$(a + b)(a - b) = a^2 - b^2$$

Examples

$$(x + 2)(x - 2) = x^2 - 2^2 = x^2 - 4$$

Multiply

$$(\sqrt{14} + 3)(\sqrt{14} - 3)$$

$$(\cancel{\sqrt{14}})^2 - 3^2$$

$$14 - 9$$

$$5$$

Simplify the product

$$(\sqrt{11} + \sqrt{6})(\sqrt{11} - \sqrt{6})$$

$$(\sqrt{11})^2 - (\sqrt{6})^2$$

$$11 - 6$$

$$5$$

Simplify the quotient

Rationalize the denominator

$$\frac{\sqrt{3} (13 - \sqrt{3})}{(13 + \sqrt{3})(13 - \sqrt{3})}$$

$$\frac{13\sqrt{3} - 3}{13^2 - (\sqrt{3})^2} = \frac{13\sqrt{3} - 3}{169 - 3} = \frac{13\sqrt{3} - 3}{166}$$

Simplify the quotient

Rationalize the denominator

$$\frac{3 \frac{20+\sqrt{7}}{(20-\sqrt{7})(20+\sqrt{7})}}{\frac{60+3\sqrt{7}}{20^2 - (\sqrt{7})^2}} = \frac{60+3\sqrt{7}}{393}$$