Algebra 2 Workbook

Exponents and radicals

POWERS OF NEGATIVE BASES

■ 1. Simplify the expression.

$$-2^2$$

■ 2. Simplify the expression.

$$(-7)^2$$

■ 3. Simplify the expression.

$$(-5)^3$$

■ 4. Simplify the expression.

$$-3^3$$

■ 5. Simplify the expression.

$$-8^2$$

POWERS OF FRACTIONS

■ 1. Simplify the expression.

$$\left(\frac{5}{6}\right)^2$$

■ 2. Simplify the expression.

$$\left(\frac{1}{2}\right)^3$$

■ 3. Simplify the expression.

$$\left(\frac{3}{5}\right)^3$$

■ 4. Simplify the expression.

$$\left(\frac{2}{3}\right)^4$$

■ 5. Simplify the expression.

$$\left(\frac{x^3}{y^2}\right)^5$$

■ 6. Simplify the expression.

$$\left(\frac{a^2}{b}\right)^4$$

■ 7. Simplify the expression.

$$\left(\frac{x}{y^3}\right)^3$$

ZERO AS AN EXPONENT

■ 1. Simplify the expression.

$$4^0$$

■ 2. Simplify the expression.

$$1{,}042^0$$

■ 3. Simplify the expression.

$$10^0$$

■ 4. Simplify the expression.

$$(-1)^0$$

■ 5. Simplify the expression.

$$x^0$$

■ 6. Simplify the expression.

$(x + 3y)^0$

■ 7. Simplify the expression.

$(2ac - 4x)^0$

■ 8. Simplify the expression.

$(-100b)^0$

NEGATIVE EXPONENTS

■ **1. Simplify the expression.**

5^{-2}

■ **2. Simplify the expression.**

4^{-3}

■ **3. Simplify the expression.**

-3^{-1}

■ **4. Simplify the expression.**

-7^{-2}

■ **5. Write the expression with only positive exponents.**

a^{-5}

■ **6. Write the expression with only positive exponents.**

$$\frac{x^{-3}}{y^{-7}}$$

$$\frac{x^{-3}}{y^{-7}}$$

NEGATIVE EXPONENTS AND POWER RULE

■ 1. Write the expression without any negative exponents.

$$3^{-1}$$

■ 2. Write the expression without any negative exponents.

$$x^{-6}$$

■ 3. Write the expression without any negative exponents.

$$\frac{1}{a^{-8}}$$

■ 4. Write the expression without any negative exponents.

$$\frac{8}{z^{-3}}$$

■ 5. Write the expression without any negative exponents.

$$\frac{2y^{-4}}{x^{-9}}$$

FRACTIONAL EXPONENTS

■ 1. Simplify the expression.

$$b^2 \cdot b^{\frac{2}{3}}$$

■ 2. Simplify the expression.

$$x^5 \cdot x^{\frac{1}{6}}$$

■ 3. Simplify the expression.

$$\left(\frac{1}{16}\right)^{\frac{3}{2}}$$

■ 4. Simplify the expression.

$$8^{\frac{2}{3}}$$

■ 5. Simplify the expression.

$$3^{-\frac{3}{7}}$$

RATIONALIZE THE DENOMINATOR

■ 1. Rationalize the denominator.

$$\frac{2}{\sqrt{5}}$$

■ 2. Rationalize the denominator.

$$\frac{1}{4\sqrt{3}}$$

■ 3. Simplify the expression, making sure to rationalize the denominator.

$$\sqrt{\frac{4}{12}} + \sqrt{\frac{9}{12}}$$

■ 4. Simplify the expression, making sure to rationalize the denominator.

$$\sqrt{\frac{6}{25}} + \sqrt{\frac{20}{24}}$$

■ 5. Simplify the expression, making sure to rationalize the denominator.

$$4\sqrt{\frac{2}{3}} - 7\sqrt{\frac{3}{2}} + \sqrt{96}$$

■ 6. Simplify the expression, making sure to rationalize the denominator.

$$5\sqrt{\frac{5}{7}} + \sqrt{\frac{7}{5}} - \sqrt{140}$$

RATIONALIZE THE DENOMINATOR WITH CONJUGATE METHOD

■ 1. Simplify the expression.

$$\frac{2 - \sqrt{5}}{\sqrt{5} - 7}$$

■ 2. Simplify the expression.

$$\frac{\sqrt{3} + \sqrt{6}}{\sqrt{6} - \sqrt{3}}$$

■ 3. Simplify the expression.

$$\frac{8}{4 + \sqrt{2}}$$

■ 4. Simplify the expression.

$$\frac{x + \sqrt{5}}{-5\sqrt{x} + \sqrt{5}}$$

■ 5. Simplify the expression.

$$\frac{1 + \sqrt{y}}{\sqrt{y} + \sqrt{3}}$$