

Algebra 2 Workbook

Exponents and radicals



POWERS OF NEGATIVE BASES

■ 1. Simplify the expression.

$$-2^{2}$$

■ 2. Simplify the expression.

$$(-3)^4$$

■ 3. Simplify the expression.

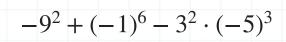
$$(-5)^3$$

■ 4. Simplify the expression.

$$-3^3 + (-1)^5 \cdot 9^2$$

■ 5. Simplify the expression.

$$-4^2 \cdot (-2)^3 + 0^4$$





POWERS OF FRACTIONS

■ 1. Simplify the expression.

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

■ 2. Simplify the expression.

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

■ 3. Simplify the expression.

$$\left(\frac{x^3}{y^5}\right)^2 \cdot \left(\frac{xy}{z^2}\right)^4$$

■ 4. Simplify the expression.

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

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

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



ZERO AS AN EXPONENT

■ 1. Simplify the expression.

$$\frac{4^0 \cdot 9^2}{(-2)^0 + 2^1}$$

■ 2. Simplify the expression.

$$1,042^{0}$$

■ 3. Simplify the expression.

$$(10^2 + 3^3)^0$$

■ 4. Simplify the expression.

$$(-1)^0$$

$$(2ac - 4x)^0$$

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 $(-100b)^0$



NEGATIVE EXPONENTS

■ 1. Simplify the expression.

$$3 \cdot 5^{-2} \cdot 6^{-2}$$

■ 2. Simplify the expression.

$$4^{-3}$$

■ 3. Simplify the expression.

$$-3^{-1}$$

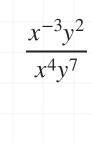
■ 4. Simplify the expression.

$$-2^{-2} \cdot (-2)^{-2}$$

■ 5. Write the expression with only positive exponents.

$$a^{-5}$$

■ 6. Write the expression with only positive exponents.





NEGATIVE EXPONENTS AND PRODUCT RULE

■ 1. Write the expression without any negative exponents.

$$\frac{(2ab)^{-2}a^2}{b^{-4} \cdot (ab)^0}$$

■ 2.Write the expression without any negative exponents.

$$\frac{2x^0y^{-5}}{z^{-1}(xy^2)^{-3}}$$

■ 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.

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

■ 6. Write the expression without any negative exponents.

$$\frac{1}{(3x^{-4}y^2)^{-3}}$$



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.

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

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



$$(81a^4b^{\frac{1}{2}})^{-\frac{5}{4}}$$



RATIONALIZING 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.

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



RATIONALIZING 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.

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

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

■ 5. Simplify the expression.

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

$$\frac{\sqrt{x}}{\sqrt{x} + \sqrt{y}}$$



