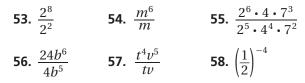
EXAMPLES

Simplify $\frac{x^9}{x^2}$.

 $\frac{x^9}{x^2} = x^{9-2} = x^7$ Subtract the exponents.

EXERCISES

Simplify.



Simplify each quotient and write the answer in scientific notation.

- **59.** $(2.5 \times 10^8) \div (0.5 \times 10^7)$
- **60.** $(2 \times 10^{10}) \div (8 \times 10^2)$

7-5 Rational Exponents (pp. 488–493)

EXAMPLES

Simplify $\sqrt[3]{r^6 s^{12}}$. $\sqrt[3]{r^6 s^{12}} = (r^6 s^{12})^{\frac{1}{3}}$ $= (r^6)^{\frac{1}{3}} \cdot (s^{12})^{\frac{1}{3}}$ $= (r^6 \cdot \frac{1}{3}) \cdot (s^{12} \cdot \frac{1}{3})$ $= (r^2) \cdot (s^4)$ $= r^2 s^4$

 $= (r^{6}s^{12})^{\frac{1}{3}}$ Definition of $b^{\frac{1}{n}}$ $= (r^{6})^{\frac{1}{3}} \cdot (s^{12})^{\frac{1}{3}}$ Power of a Product $= (r^{6} \cdot \frac{1}{3}) \cdot (s^{12} \cdot \frac{1}{3})$ Power of a Power Property Property

Simplify exponents.

EXERCISES

Simplify each expression.

61. $81^{\frac{1}{2}}$	62. $343^{\frac{1}{3}}$
63. $64^{\frac{2}{3}}$	64. $(2^6)^{\frac{1}{2}}$

Simplify each expression. All variables represent nonnegative numbers.

65. $\sqrt[5]{z^{10}}$	66. $\sqrt[3]{125x^6}$
67. $\sqrt{x^8y^6}$	68. $\sqrt[3]{m^6 n^{12}}$

7-6 Polynomials (pp. 496–501)

EXAMPLES

- Find the degree of the polynomial $3x^2 + 8x^5$. $3x^2 + 8x^5$ 8x⁵ has the highest degree. The degree is 5.
- Classify the polynomial *y*³ − 2*y* according to its degree and number of terms.

Degree: 3 Terms: 2

The polynomial $y^3 - 2y$ is a **cubic binomial**.

EXERCISES

Find the degree of each polynomial.

69.	5	70.	8st ^a
71.	$3z^{6}$	72.	6h

Write each polynomial in standard form. Then give the leading coefficient.

73.
$$2n - 4 + 3n^2$$
 74. $2a - a^4 - a^6 + 3a^3$

Classify each polynomial according to its degree and number of terms.

75.
$$2s - 6$$
 76. $-8p^5$

77.
$$-m^4 - m^2 - 1$$
 78. 2