

10.3

Quotient of Powers Property

8-2 Exponent Properties with Quotients

Example 1

$$\frac{x^5}{x^3}$$

Example 2

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

The Quotient of Powers Property:

_____ base & _____ the exponents.

Practice

Simplify

$$1) \frac{x^9}{x^5}$$

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

$$3) \frac{x^{16}}{x^9}$$

$$4) \frac{x^{17}}{x^8}$$

$$5) \frac{8^{10}}{8^4}$$

$$6) \frac{4^7}{4^6}$$

Practice

Simplify

$$7) \frac{x^{24}}{x^{16}}$$

$$8) \frac{1}{(-5)^4} \bullet (-5)^{11}$$

$$9) \frac{x^3 y}{x^2}$$

$$10) \quad \frac{3^4 \bullet 3^2}{3^3}$$

$$11) \quad \frac{5^6 \bullet 5^2}{5^4}$$

$$12) \quad \frac{\mathbf{z}^6}{\mathbf{z}^2} \bullet \frac{\mathbf{z}^8}{\mathbf{z}^5}$$

$$13) \quad \frac{\mathbf{a}^{10}}{\mathbf{a}^6} \bullet \frac{\mathbf{a}^7}{\mathbf{a}^4}$$

$$14) \quad \frac{d^5}{d} \bullet \frac{d^9}{d^8}$$

$$15) \quad \frac{2^{15}}{2^3 \bullet 2^5}$$

Solve for the missing exponent...

$$16) \quad \frac{12^9}{12^?} = 12^5$$

On Your Own

Simplify the expression. Write your answer as a power.

1. $\frac{3^8}{3^6}$

2. $\frac{10^{11}}{10^3}$

3. $\frac{(-4)^5}{(-4)^4}$

4. $\frac{(5.6)^{15}}{(5.6)^9}$

5. $\frac{p^{13}}{p^{11}}$

6. $\frac{(-0.7)^{25}}{(-0.7)^{12}}$

7. $\frac{s^{28}}{s^7}$

8. $\frac{\pi^6}{\pi}$

On Your Own

Simplify the expression. Write your answer as a power.

$$10. \frac{6^3 \bullet 6^7}{6^4}$$

$$11. \frac{3^4 \bullet 3^5}{3 \bullet 3^2}$$

$$12. \frac{(-0.5)^8 \bullet (-0.5)^5}{(-0.5)^6 \bullet (-0.5)^2}$$

$$13. \frac{m^{14}}{m^{10}} \bullet \frac{m^5}{m^2}$$

Simplify the expression.

$$14. \frac{5^4 \bullet n^4}{5^2}$$

$$15. \frac{x^5 \bullet z^4}{x^2 \bullet z^2}$$

$$16. \frac{c^6 \bullet d^{10} \bullet 2^6}{d^5 \bullet 2^3}$$

$$17. \frac{a^{12}b^8}{a^{10}b^5}$$