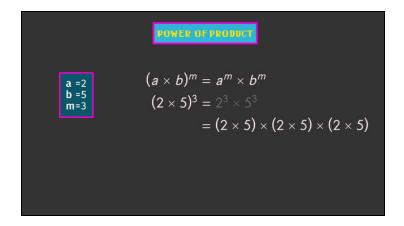
Printable Worksheets from sofatutor.com

Powers of Products and Quotients



1 Determine the missing term.

Prove that $(2 \times 5)^3 = 2^5 \times 3^5$ using the power of products rule.

3 Complete the following examples.

4 Determine which terms are equal.

8 Rewrite each term using the power of a product, power, and quotient rules.

+ with lots of tips, answer keys, and detailed answer explanations for all of the problems.

A

The complete package, **including all problems**, **hints**, **answers**, **and detailed answer explanations** is available for all sofatutor.com subscribers.



Determine the missing term.

Fill in the blank.



Charlotte's playing a game; she needs to figure out the power rules for products as well as quotients.

 $a^m + b^m$

basis

divide

 $\overline{a^{(m-n)}}$

subtract

 $a^m - b^m$

 $\overline{a^{m imes p}}$

multiply

 $a^{(m+n)}$

add

numerator

 $a^m \div b^m$

 $a^m imes b^m$

factor

denominator

 $\left(\frac{a}{b}\right)^m = \underline{\qquad \qquad }$

Hints for solving these problems



Determine the missing term.

Hint #1

 $(2 imes 3)^2=(2 imes 3)(2 imes 3)=2 imes 2 imes 3 imes 3$

An example using the power of products rule:

Hint #2

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

An example using the power of quotients rule:

Hint #3

 $(3^2)^3 = (3^2) imes (3^2) imes (3^2)$

If you raise a power to a power, you can write it as a product:

Answers and detailed answer explanations for these problems



Determine the missing term.

Answer key: 1: factor // 2: $a^m \times b^m$ // 3: multiply // 4: basis // 5: $a^{m \times p}$ // [6+7]¹: numerator **or** denominator // 8: $a^m \div b^m$

¹Each answer can only be used once. You can answer them in whatever order you want.

Let's start with the power of products rule:

$$(a \times b)^m = a^m \times b^m$$
.

This means that you have to raise each factor to the same power.

To raise a power to a power, $(a^m)^p = a^{m \times p}$, keep the basis and multiply the exponents.

Let's look at the power of quotients rule:

$$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}.$$

Here we raise the numerator as well as the denominator by the power.

