

13 JUNE, 2026

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power
5²
exponent
base

$$5^2 = 5 \times 5 = 25$$

✓ <u>Product Rule</u>	$\underline{a^m} \times \underline{a^n} = \underline{a^{m+n}}$
✓ <u>Quotient Rule</u>	$a^m \div a^n = a^{m-n}$
✓ <u>Power of a Power Rule</u>	$\underline{(a^m)^n} = a^{mn}$
✓ <u>Power of a Product Rule</u>	$\underline{(ab)^m} = \underline{a^m b^m}$
✓ <u>Power of a Quotient Rule</u>	$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$
✓ <u>Zero Exponent Rule</u>	$a^0 = 1$
✓ <u>Negative Exponent Rule</u>	$\underline{a^{-m}} = \frac{1}{a^m}$
✓ <u>Fractional Exponent Rule</u>	$\underline{a^{\frac{m}{n}}} = \underline{n\sqrt{a^m}}$

$$(2^3)^2 = 2^{3 \times 2} = 2^6$$

$$7^0 = 1$$

$$9^{-2} = \frac{1}{9^2} = \frac{1}{81}$$

$$2^2 \times 2^7 = 2^{2+7} = 2^9$$

= 2

$$3^7 \div 3^4 = 3^{7-4} = 3^3 = 27$$

$$(2 \times 5)^3 = 2^3 \times 5^3$$

$$1. x^3 \times x^2 = x^{3+2} = x^5$$

$$2. \underline{a^4 \times a^5} = a^9$$

Product Rule

$$5. y^7 \div y^3 = y^4$$

$$6. b^8 \div b^2 = b^6$$

Quotient Rule

$$9. (x^2)^3 = x^{2 \times 3} = x^6$$

$$10. (a^4)^2 = a^8$$

$$11. (m^3)^2 = m^6$$

Power of Power Rule

$$13. (xy)^2 = x^2 y^2$$

$$14. (ab)^3 = a^3 b^3$$

$$15. (mn)^2 = m^2 n^2$$

Power of Product Rule

Simplify:

$$4 + 3 \quad (7)$$

$$\begin{aligned}
 1. & x^4 \times x^3 = x^7 \\
 2. & a^8 \div a^3 = a^5 \\
 3. & (m^2)^4 = m^8 \\
 4. & (pq)^3 = p^3 q^3 \\
 5. & (y^2)^3 = y^6
 \end{aligned}$$

$$(y^3)^2 \div y^2$$

$$= y^6 \div y^2 = y^4$$

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

$$\left(\frac{5}{7}\right)^2 = \frac{5^2}{7^2} = \frac{5 \times 5}{7 \times 7} = \frac{25}{49}$$

power of quotient rule

Simplify the following expressions:

$$1. x^7 \times x^5 = x^{12}$$

$$2. a^{12} \div a^4 = a^8$$

$$3. (m^3)^4 = m^{12}$$

$$\checkmark 4. (2pq)^3 = 2^3 p^3 q^3 = 8 p^3 q^3$$

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

$$6. 7^0 = 1$$

$$7. p^{-3} = \frac{1}{p^3}$$

$$8. (ab)^2 \times a^3 = a^2 b^2 \times a^3 = a^{2+3} b^2 = a^5 b^2$$

$$\checkmark 9. \frac{m^9}{m^2} = m^9 \div m^2 = m^{9-2} = m^7$$

$$10. \left(\frac{2x}{3y}\right)^2$$

$$9) (ab)^2 \times a^3 \\ = a^2 b^2 \times a^3 \\ = a^5 b^2$$

$$10) \left(\frac{2x}{3y}\right)^2 = \frac{(2x)^2}{(3y)^2} \\ = \frac{4x^2}{9y^2}$$

$$1. (3xy)^2 = 9x^2 y^2$$

$$2. (mn)^3 \times m^2 = m^5 n^3$$

$$3. \frac{p^{11}}{p^4} = p^7$$

$$4. \left(\frac{4a}{5b}\right)^2 = \frac{16a^2}{25b^2}$$