



$$a^n \times a^m = a^{n+m}; \frac{a^n}{a^m} = a^{n-m}; (a^n)^m = a^{nm} \text{ et } a^0 = 1$$

Astuce

Simplifier au maximum

1. $3^4 \times 3^2$

2. $\frac{5^7}{5^3}$

3. $(2^3)^4$

4. $10^{-3} \times 10^5$

5. $\frac{4^5}{4^8}$

6. $(x^2)^5$

7. $x^3 \times x^{-6}$

8. $\frac{y^7}{y^{-2}}$

9. $(2x^3)^2$

10. $\frac{a^4 b^2}{a b^5}$

11. $(3x^2 y)^3$

12. $\frac{(2^3)^4}{2^5}$

13. $x^0 \cdot y^4 \cdot z$

14. $(m^{-2})^3$

15. $\frac{5^6 \cdot 2^3}{5^2 \cdot 2^5}$

16. $\left(\frac{a^3}{b^2}\right)^2$

17. $\frac{x^4 y^3}{x y^5}$

18. $(4a^2 b)^3$

19. $\frac{3^2 \cdot x^3}{x^{-2} \cdot 3}$

20. $\left(\frac{2x^{-1}}{y^2}\right)^3$

Corrigé

$$1. 3^4 \times 3^2 = 3^{4+2} = 3^6 = 729$$

On utilise la règle : $a^m \times a^n = a^{m+n}$. Ici, on additionne les exposants.

$$2. \frac{5^7}{5^3} = 5^{7-3} = 5^4 = 625$$

On utilise la règle : $\frac{a^m}{a^n} = a^{m-n}$. Ici, on soustrait les exposants.

$$3. (2^3)^4 = 2^{3 \times 4} = 2^{12} = 4096$$

On utilise la règle : $(a^m)^n = a^{m \times n}$. Ici, on multiplie les exposants.

$$4. 10^{-3} \times 10^5 = 10^2 = 100$$

$$5. \frac{4^5}{4^8} = 4^{-3} = \frac{1}{4^3} = \frac{1}{64}$$

$$6. (x^2)^5 = x^{10}$$

$$7. x^3 \times x^{-6} = x^{-3} = \frac{1}{x^3}$$

$$8. \frac{y^7}{y^{-2}} = y^9$$

$$9. (2x^3)^2 = 4x^6$$

$$10. \frac{a^4 b^2}{a b^5} = a^3 b^{-3} = \frac{a^3}{b^3}$$

$$11. (3x^2 y)^3 = 27 x^6 y^3$$

$$12. \frac{(2^3)^4}{2^5} = \frac{2^{12}}{2^5} = 2^7 = 128$$

$$13. x^0 \cdot y^4 \cdot z = 1 \cdot y^4 \cdot z = y^4 z$$

$$14. (m^{-2})^3 = m^{-6} = \frac{1}{m^6}$$

$$15. \frac{5^6 \cdot 2^3}{5^2 \cdot 2^5} = 5^4 \cdot 2^{-2} = \frac{625}{4}$$

$$16. \left(\frac{a^3}{b^2} \right)^2 = \frac{a^6}{b^4}$$

$$17. \frac{x^4 y^3}{xy^5} = x^3 y^{-2} = \frac{x^3}{y^2}$$

$$18. (4a^2 b)^3 = 64a^6 b^3$$

$$19. \frac{3^2 \cdot x^3}{x^{-2} \cdot 3} = \frac{9x^3}{3x^{-2}} = 3x^5$$

$$20. \left(\frac{2x^{-1}}{y^2} \right)^3 = \frac{8x^{-3}}{y^6} = \frac{8}{x^3 y^6}$$