

Exponents (Powers)

Chapter 2: Exponents (Powers) · Topic 1

Key Concept

An exponent shows how many times a base number is multiplied by itself, like 3^4 meaning $3 \times 3 \times 3 \times 3 = 81$.

Laws of exponents include: $a^m \times a^n = a^{(m+n)}$, $a^m \div a^n = a^{(m-n)}$, and $(a^m)^n = a^{(mn)}$.

A negative exponent, like a^{-n} , equals $1/a^n$, representing a reciprocal, while a^0 always equals 1 (for any non-zero a).

Mastering exponent laws simplifies complex calculations and is essential for algebra, scientific notation, and higher mathematics.

Quick Revision Notes

- An exponent shows repeated multiplication.
- $3^4 = 3 \times 3 \times 3 \times 3 = 81$.
- Multiplication law: $a^m \times a^n = a^{(m+n)}$.
- Division law: $a^m \div a^n = a^{(m-n)}$.
- Power law: $(a^m)^n = a^{(mn)}$.
- Negative exponent: $a^{-n} = 1/a^n$.
- Any number to power 0 equals 1.
- Exponent laws simplify complex calculations.

Practice Questions

- 1 Calculate 2^5 .
- 2 Simplify $3^3 \times 3^2$ using exponent laws.
- 3 Simplify $(2^2)^3$ using the power law.
- 4 Calculate 5^0 .
- 5 Calculate 2^{-3} .
- 6 Solve three exponent problems.