



Algebra 1

Topic: Properties of Exponents

Instructions

Solve the following problems using the properties of exponents. Show all your work and check your solutions.

Practice Problems

1. Simplify the following expressions using the properties of exponents:

(i) $x^2 \cdot x^3$

(ii) $\frac{x^4}{x^2}$

(iii) $(x^3)^2$

(iv) $(2x^2)^3$

(v) $\frac{2x^3 \cdot x^2}{x^4}$

(vi) $x^5 \cdot x^{-3}$

(vii) $\frac{a^7}{a^3}$

(viii) $(3x^4)^2$

(ix) $\frac{4x^6}{2x^2}$

(x) $(x^2 \cdot y^3)^2$

2. Solve the following exponential equations:

(i) $2^x = 32$

(ii) $3^{x-2} = 27$

(iii) $5^{x+1} = 125$

(iv) $4^x = 64$

(v) $7^{2x} = 49$

(vi) $(3^x)^2 = 81$

(vii) $9^{x-1} = 81$

(viii) $2^{3x} = 8$

(ix) $10^x = 1000$

(x) $6^{x+1} = 216$

Multiple-Choice Questions

1. The simplified form of $\frac{x^5}{x^3}$ is:
 - a. x^8
 - b. x^2
 - c. x^3
 - d. x^5
2. The simplified form of $(x^2)^3$ is:
 - a. x^6
 - b. x^5
 - c. x^4
 - d. x^3
3. The simplified form of $\frac{a^4 \cdot b^2}{a^2 \cdot b^3}$ is:
 - a. $a^2 \cdot b^{-1}$
 - b. $a^2 \cdot b^1$
 - c. $a^2 \cdot b^2$
 - d. $a^{-2} \cdot b^{-1}$
4. The simplified form of $\frac{3x^5}{3x^2}$ is:
 - a. x^3
 - b. x^2
 - c. x^5
 - d. x^4
5. The simplified form of $(5x^3)^2$ is:
 - a. $25x^6$
 - b. $25x^5$
 - c. $5x^6$
 - d. $5x^5$

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