

Exponent & Logarithm Review

1. Simplify expressions that have exponents.

Rules- Multiplying bases: $x^3 \cdot x^5 =$

Dividing bases: $\frac{x^{10}}{x^4} =$

Power raised to a power: $(x^3)^4 =$

Zero power: $x^0 =$

Negative power: $x^{-2} =$

Fractional power: $25^{1/2} =$

2. Change between exponent form and log form.

$$\log_b y = x \qquad y = b^x$$

$$\ln y = x \qquad y = e^x$$

3. Simplify logarithms.

Rules - Addition: $\log_b x + \log_b y =$

Subtraction: $\log_b x - \log_b y =$

Multiplication: $2 \log_b y =$

4. Use logarithms to solve for x when it's an exponent.

5. Solve log or ln equations.

Practice.

Simplify.

1. $(3x^2)^3 (2x)^2$

2. $\frac{x^4 y^{-3} z^2}{x^6 y^5 z^4}$

3. $x^{\frac{4}{3}} x^{\frac{1}{4}}$

4. $(x^4 y^8)^{\frac{5}{4}}$

Write each expression as one logarithm.

8. $3 \log_5 2 + 2 \log_5 4$

9. $\frac{1}{2} \log 81 - \frac{1}{3} \log 27$

10. $\ln 48 - \ln 6 + \ln 2$

Solve for x.

11. $54 = 2^x$

12. $1.6(85.7)^x = 2840$

13. $e^{2x} = 63$

14. $\log_3(3x - 2) = 2$

15. $\ln(2x + 1) = 3$

Change the logarithm to an exponential equation. Solve for x.

5. $\log_3 81 = x$

6. $\log_x 25 = 2$

7. $\ln x = 2$