Algebra 2 7.6

Solve exponential equations and inequalities using common logs Evaluate logarithmic expressions by changing bases
Use log expressions to evaluate pH and H+ concentration

base exponent logarithm default common log pH = $-\frac{1}{2}$ Whiteboards

Example 4 Solve Exponential Inequalities Using Logarithms

Solve $3^{5y} < 7^{y-2}$. Round to the nearest ten-thousandth.

$$\log 3^{56} < \log 7$$
 $59.0.47712 (9-2) (0.8451)$
 $2.3855 y < 0.8451y - 1.690 z$
 $\frac{1.5445y}{1.8445} < \frac{-1.6902}{1.8445}$
 $y < 0.9163$

0 (nomma)

Solve each inequality.

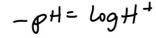
4A.
$$3^{2x} \ge 6^{x+1}$$

$$2\times () \geq (\times + 1) ($$

11. $6^{p-1} \le 4^p$

$$(P^{-1}|(0.7782) \leq P(0.6021)$$

 $0.7782p - 0.7782 \leq 0.6021P$
 $0.1761p \leq 0.7782$
 $P \leq 4.4191$





Real-World Example 2 Quotient Property

SCIENCE The pH of a substance is defined as the concentration of hydrogen ions $[H^+]$ in moles. It is given by the formula Find the amount of hydrogen in a liter of acid rain that has a pH of 4.2.

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Use the formula $pH = -log[\dot{H}+]$ to find the pH of each substance given its concentration of hydrogen ions. Round to the nearest tenth.

- 4. milk; $[H+] = 2.51 \times 10^{-7}$ mole per liter 6.6 Q 0 0 Q 0 2 5 1 5. acid rain: $[H+] = 2.51 \times 10^{-6}$ mole per liter
- 6. black coffee: $[H+] = 1.0 \times 10^{-5}$ mole per liter

$$f_{-1}^{1+-} - \log_{1}(2.51 \times 10^{-7})$$

$$-p_{+} - \log_{1}(2.51 \times 10^{-7})$$

$$-p_{+} - \log_{1}(2.51 \times 10^{-7})$$

$$-p_{+} - \frac{\log_{1}(2.51 \times 10^{-7})}{\log_{1}(0.60000251)}$$



WB 7.6 prac.