6.5 Solve Exponential Equations DAY ONE

What You Will Learn:

- Solve exponential equations with the same base.
- Solve exponential equations with unlike bases.
- Solve exponential equations by graphing.

Core Vocabulary:

exponential equation

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Solving Exponential Equations with the Same Base

Exponential equations are equations in which variable expressions occur as exponents.



Property of Equality for Exponential Equations

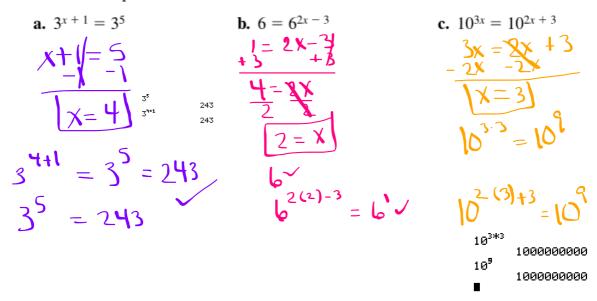
Words Two powers with the *same positive base b*, where $b \ne 1$, are equal if and only if their exponents are equal.

Numbers If $2^x = 2^5$, then x = 5. If x = 5, then $2^x = 2^5$.

Algebra If b > 0 and $b \ne 1$, then $b^x = b^y$ if and only if x = y.

EXAMPLE 1 Solving Exponential Equations with the Same Base

Solve each equation.

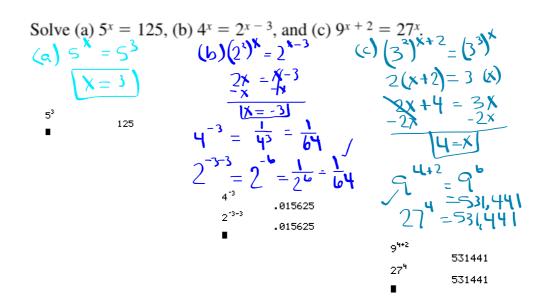


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Solving Exponential Equations with Unlike Bases

To solve some exponential equations, you must first rewrite each side of the equation using the same base.

EXAMPLE 2 Solving Exponential Equations with Unlike Bases



Your Turn:

Solve (a)
$$\left(\frac{1}{2}\right)^x = 4$$
 and (b) $4^{x+1} = \frac{1}{64}$.
(a) $(2^{-1})^x = 2^{-1}$ (b) $4^{x+1} = 4^{-3}$
 $-1(x) = 2$ $x = -2$
 $(1/2)^{-2}$ 4^{-1+1} .015625

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6.5 DAY ONE Assignment:

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