Exponential and Logarithmic Equations

Example Problems

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Problem 1: Common Base Exponents

Solve for x

$$32^{x+4} = 8^{2x-4}$$

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Solve for x

$$32^{x+4} = 8^{2x-4}$$

$$= 2^{5(x+4)} = 2^{3(2x-4)}$$

Problem 1: Common Base Exponents

Solve for x

$$2^{5x+20} = 2^{6x-12}$$

$$= 5x + 20 = 6x - 12$$

Problem 1: Common Base Exponents

Solve for x

$$5x + 20 = 6x - 12$$

$$x = 32$$

Problem 2: Solving Exponential Equations

Solve for x and round to the nearest hundredth

$$8 * 8^{10x} = 24$$

Problem 2: Solving Exponential Equations

Solve for x and round to the nearest hundredth

$$8 * 8^{10x} = 24$$

$$-> 8^{10x} = \frac{24}{8}$$

Problem 2: Solving Exponential Equations

Solve for x and round to the nearest hundredth

$$8^{10x} = 3$$

$$-> log 8^{10x} = log 3$$

Problem 2: Solving Exponential Equations

Solve for x and round to the nearest hundredth

$$log8^{10x} = log3$$
$$-> 10xlog8 = log3$$

Problem 2: Solving Exponential Equations

Solve for x and round to the nearest hundredth

$$10x * log8 = log3$$

$$-> 10x = \frac{log3}{log8}$$

Problem 2: Solving Exponential Equations

Solve for x and round to the nearest hundredth

$$10x = 0.5283208$$

$$x = \frac{0.5283208}{10}$$

$$x = 0.053$$

Problem 3: Evaluating Logarithms

Find the value of the logarithm

$$log_{12}1728$$

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Find the value of the logarithm

$$log_{12}1728$$

$$log_{12}12^3$$

$$log_{12}1728 = 3$$

Congrats!

That wasn't too bad, was it?