keep scrolling to get a sneak peek!

Help your Algebra 2 and Pre-Calculus students practice **solve logarithmic equations** without exponentiating. Students will be eager to get the self-checking benefits from this circuit activity!

SOLVING LOGARITHMIC EQUATIONS

Differentiated Circuit Worksheet

Answer Key

SOLVING LOGARITHMIC EQUATIONS CIRCUIT

A circuit is a route that starts and ends at the same place. Start in the first box and solve the problem. Search through the remaining boxes for the answer you got for the problem. Complete that question. Continue until you have completed the questions and you get to the original question. Record your path below.

$$4 \rightarrow 8 \rightarrow 6 \rightarrow 2 \rightarrow 9 \rightarrow 5 \rightarrow 3 \rightarrow 10 \rightarrow 7$$

Answer: $x = 2\sqrt{26}$ # 7

$\log(x + 5) = \log_4(x + 1)$

$3x + 5 = x + 1$
$-x \quad\quad -x$
$2x + 5 = 1$
$\quad\quad -5 \quad -5$
$\dfrac{2x}{2} = \dfrac{-4}{2}$
$x = -2$ NO solution!

Previous Answer: $x = \pm\sqrt{10}$

2. $\log_5(x - 2) = 2$

$5^2 = x - 2$
$25 = x - 2$
$+2 \quad\quad +2$
$\boxed{27 = x}$

Previous Answer: No solut...

4. $2\log_3(x - 1) = \log_3 16$

$(x-1)^2 = \sqrt{16}$

#5

SOLVING LOGARITHMIC EQUATIONS

Directions: A circuit is a route that starts and ends at the same place. Start in box 1 and solve the problem. Search through the remaining boxes for the answer you got for the problem. Now complete that question. Continue until you have completed the questions and you get to the original question. Record your path below.

$$1 \rightarrow \_\_\_ \rightarrow \_\_\_ \rightarrow \_\_\_ \rightarrow \_\_\_ \rightarrow \_\_\_ \rightarrow \_\_\_ \rightarrow \_\_\_$$

Previous Answer: $x = 125$

1. $\log(x - 1) + \log 2 = 1$ #___

Previous Answer: $x = 12$

2. $\log_6 5x = \log_6(2x + 9)$

Previous Answer: $x = 5$

3. $\log_3(x - 1) = 2$ #___

Previous Answer: $x = 6$

4. $\log_2 x = 5$

2 VERSIONS + ANSWER KEY INCLUDED

why do you need this?

Solving Logarithmic Equations Circuit

✏️ It's self-checking! Your students will know if they are correct or not.

✏️ 2 differentiated versions for all students practice this essential math skill.

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Solving Logarithmic Equations Circuit *includes*:

Challenge: Solve. Show all work!
$$\log_3(x+2) + \log_3(x-2) = \log_3 3x$$

How are you feeling about this topic? Circle one:

Helpful Hints: Use these hints to help you solve the problems.

Steps to solve:

Step 1: Condense to one log.
Step 2: Set it up based on what you are given.
    2a: Same base on both sides? *Drop the logs.*
    2b: A log on just one side? *Rewrite into exponential form.*
Step 3: Solve to isolate the variable.
Step 4: Check for extraneous solutions.

Basic Log Rules:

$\log_a 1 = 0 \qquad \log_a a = 1 \qquad \log_a a^x = x$

Product Property: $\log_b(m \cdot n) = \log_b m \cdot \log_b n$

Quotient Property: $\log_b\left(\frac{m}{n}\right) = \log_b m - \log_b n$

Power Property: $\log_b m^n = n\log_b m$

How are you feeling about this topic? Circle one:

✅ 10 self-checking problems

✅ a detailed answer key

✅ a standard version with an extension question

✅ a basic version with helpful hints section

✅ student self assessment

Solving Logarithmic Equations Circuit

standards covered:

CCSS: HSF–BF.B.5

TEKs: A2.5.D, A2.5.E, P.5.H

how this circuit resource works

Students can track their path at the top.

Students start with the first question.

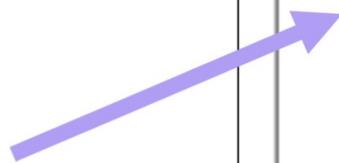The last question they answer should lead back to problem #1 to "close" the circuit.

Name: _____ Date: _____

SOLVING LOGARITHMIC EQUATIONS CIRCUIT

Directions: A circuit is a route that starts and ends at the same place. Start in the first box labeled 1 and solve the problem. Search through the remaining boxes for the answer you got for question 1. Now complete that question. Continue until you have completed the questions and you are back to the original question. Record your path below.

$1 \rightarrow$ ____ $\rightarrow$ ____ $\rightarrow$ ____ $\rightarrow$ ____ $\rightarrow$ ____ $\rightarrow$ ____ $\rightarrow$ ____ $\rightarrow$ ____ $\rightarrow$ ____ $\rightarrow 1$

Previous Answer: $x = 125$ #____	Previous Answer: $x = 12$ #____
1. $\log(x - 1) + \log 2 = 1$	2. $\log_6 5x = \log_6 (2x + 9)$
Previous Answer: $x = 5$ #____	Previous Answer: $x = 6$ #____
3. $\log_3 (x - 1) = 2$	4. $\log_2 x = 5$

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how to use this resource

This is a great activity to use when reviewing how to solve logarithmic equations **without exponentiating.**

It can be used right after teaching the concept or as homework.

This is also a **substitute-friendly** assignment!

You may also *enjoy*...

hey there!

My name is Malia and I'm passionate about making learning and practicing math fun. I love creating engaging math resources for my students and I hope your students enjoy this activity too!

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