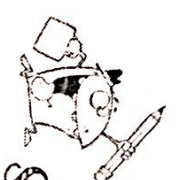


LOGARITHMIC EQUATIONS

NAME _____

Key _____

Solve these equations starting at the start box and continuing until you reach the "END" Not all problems may be used.



START

C $\log_2 2 - \log_5 (x+7) = 1$
 $\log_5 \frac{2}{x+7} = 1$
 $5^1 = \frac{2}{x+7}$
 $5x+5 = 2$
 $5x = -3$
 $x = -3/5$

END

A $\log_8 (10) - \log_8 (x-1) = 1$

B $\log_3 (x+4) - \log_3 (x-4) = 3$
 $\frac{3^3 = \frac{x+4}{x-4}}{27x - 108 = x+4}$
 $26x = 112$
 $x = 56/13$

D $\log_2 (5x^2) - \log_2 5 = 4$
 $\log_2 \left(\frac{5x^2}{5}\right) = 4$
 $\log_2 (x^2) = 4$
 $2^4 = x^2$
 $16 = x^2$
 $x = 4, -4$

E $\log(x-3) - \log x = 2$
 $\log \left(\frac{x-3}{x}\right) = 2$
 $10^2 = \frac{x-3}{x}$
 $100x = x-3$
 $99x = -3$
 $x = -1/33$

F $\log_4 (-4x) - \log_4 6 = 1$
 $\log_4 \left(\frac{-4x}{6}\right) = 1$
 $4^1 = \frac{-4x}{6}$
 $24 = -4x$
 $-6 = x$

G $\log(2+x) - \log(x-2) = \log 3$
 $\log \left(\frac{2+x}{x-2}\right) = \log 3$
 $\frac{2+x}{x-2} = 3$
 $2+x = 3x-6$
 $3x-6 = 2+x$
 $2x = 8$
 $x = 4$

H $\log \frac{x+4}{x-2} = 1$
 $10^1 = \frac{x+4}{x-2}$
 $10x - 20 = x+4$
 $9x = 24$
 $x = 8/3$

I $\log_8 5(5x-1) = 1$
 $8^1 = 25x-5$
 $13 = 25x$
 $13/25 = x$

J $\log(x+9) = 1 - \log x$
 $\log(x+9) + \log x = 1$
 $10^1 = x^2 + 9x$
 $0 = x^2 + 9x - 10$
 $0 = (x+10)(x-1)$
 $x = -10$ or $x = 1$

K $\log_5 (x-8) - \log_5 2 = \log_5 78$
 $\log_5 \left(\frac{x-8}{2}\right) = \log_5 78$
 $\frac{x-8}{2} = 78$
 $x-8 = 156$
 $x = 164$

L $\log_6 \frac{2x}{8-x} = 1$
 $6^1 = \frac{2x}{8-x}$
 $48 = 2x - 8x$
 $48 = -6x$
 $x = -8$

M $\log_5 (5x+7) - \log_5 8 = \log_5 49$
 $\log_5 \frac{5x+7}{8} = \log_5 49$
 $\frac{5x+7}{8} = 49$
 $5x+7 = 392$
 $5x = 385$
 $x = 77$

N $\log_6 \left(\frac{2x^2}{3}\right) = 2$
 $6^2 = \frac{2x^2}{3}$
 $108 = 2x^2$
 $54 = x^2$
 $x = \pm 3\sqrt{6}$

O $\log_5 (2x^2) - \log_5 5x = 6$

P $\log_3 (x+4) - \log_3 (x-4) = 3$
 $\frac{3^3 = \frac{x+4}{x-4}}{27x - 108 = x+4}$
 $26x = 112$
 $x = 56/13$

Q $\log_2 (x^2) - \log_2 5 = 4$
 $\log_2 \left(\frac{x^2}{5}\right) = 4$
 $\log_2 (x^2) = 4$
 $2^4 = x^2$
 $16 = x^2$
 $x = 4, -4$

R $\log_8 5 + \log_8 (5x-1) = 1$
 $8^1 = 25x-5$
 $13 = 25x$
 $13/25 = x$

S $\log_6 (2x^2) = 2$
 $6^2 = \frac{2x^2}{3}$
 $108 = 2x^2$
 $54 = x^2$
 $x = \pm 3\sqrt{6}$

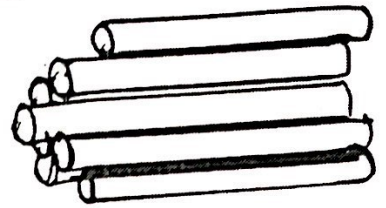
Name: KEY

Date: _____

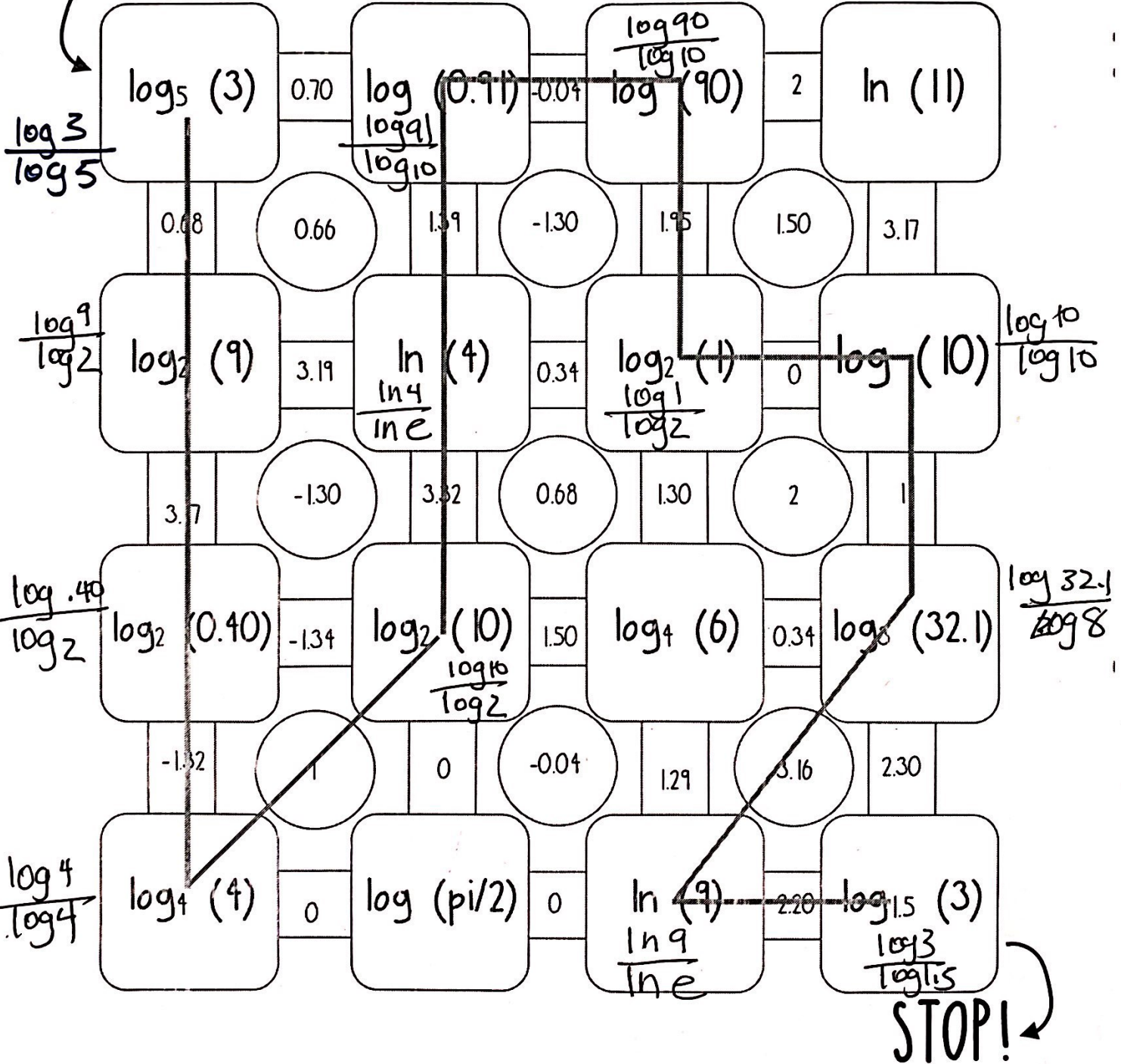
Score: _____

Calculating Logs Maze

Instructions: Calculate each log until you reach the STOP point.
Round your answers to the nearest hundredths place.



START!



Logarithmic Equations Maze

Directions: Find the solution to each equation to "find the log" and solve the maze. SHOW YOUR WORK!

<p>START: $\log_3 81 = x$ $3^x = 81$ $3^x = 3^4$ $x = 4$</p>	5	<p>$\log_{27} x = \frac{1}{3}$ $27^{\frac{1}{3}} = x$ $\sqrt[3]{27} = x$ $x = 3$</p>	3	<p>$\log_5 x = 2$ $5^2 = x$ $x = 25$</p>	25	<p>$\log_{32} x = \frac{1}{5}$ $32^{\frac{1}{5}} = x$ $\sqrt[5]{32} = x$ $x = 2$</p>
4	-4	64	-64	-25	0.1	2
<p>$\log_8 x = \frac{1}{3}$ $8^{\frac{1}{3}} = x$ $\sqrt[3]{8} = x$ $x = 2$</p>	2	<p>$\log_4 x = 3$ $4^3 = x$ $x = 64$</p>	12	<p>$\log_9 x = \frac{1}{2}$</p>	3	<p>$\log 0.01 = x$ $10^x = \frac{1}{100}$ $10^x = 10^{-2}$ $x = -2$</p>
-2	-9	10	6	-6	-2	10
<p>$\log_{\frac{1}{3}} x = -2$ $(\frac{1}{3})^{-2} = x$ $(\frac{3}{1})^2 = x$ $x = 9$</p>	4	<p>$\log_4 256 = x$ $4^x = 256$ $4^x = 4^4$ $x = 4$</p>	1	<p>$\log_3 x = -2$ $3^{-2} = x$ $x = \frac{1}{3^2}$ $x = \frac{1}{9}$</p>	32	<p>$\log_{\frac{1}{5}} x = 2$</p>
9	$\frac{1}{9}$	5	-9	9	-6	$\frac{1}{25}$
<p>$\log_{16} x = \frac{1}{4}$ $16^{\frac{1}{4}} = x$ $\sqrt[4]{16} = x$ $x = 2$</p>	2	<p>$\log_2 64 = x$ $2^x = 64$ $2^x = 2^6$ $x = 6$</p>	6	<p>$\log_{\sqrt{5}} 5 = x$ $\sqrt{5}^x = 5$ $5^{\frac{1}{2}x} = 5^1$ $\frac{1}{2}x = 1$ $x = 2$</p>	2	<p>STOP!</p> 