Kuta Software - Infinite Algebra 2 Name_____

Logarithmic Equations

Date_____ Period____

Solve each equation.

1) $\log 5x = \log (2x + 9)$

2) $\log (10 - 4x) = \log (10 - 3x)$

3) $\log (4p - 2) = \log (-5p + 5)$

4) $\log (4k - 5) = \log (2k - 1)$

5) $\log (-2a + 9) = \log (7 - 4a)$

6) $2\log_7 -2r = 0$

7) $-10 + \log_3 (n + 3) = -10$

8) $-2\log_5 7x = 2$

9) $\log -m + 2 = 4$

10) $-6\log_3 (x - 3) = -24$

11) $\log_{12} (v^2 + 35) = \log_{12} (-12v - 1)$

12) $\log_9 (-11x + 2) = \log_9 (x^2 + 30)$

13) $\log(16+2b) = \log(b^2-4b)$

14) $\ln(n^2+12) = \ln(-9n-2)$

15) $\log x + \log 8 = 2$

16) $\log x - \log 2 = 1$

17) $\log 2 + \log x = 1$

18) $\log x + \log 7 = \log 37$

19) $\log_8 2 + \log_8 4x^2 = 1$

20) $\log_9(x+6) - \log_9 x = \log_9 2$

21) $\log_6(x+1) - \log_6 x = \log_6 29$

22) $\log_5 6 + \log_5 2x^2 = \log_5 48$

23) $\ln 2 - \ln(3x+2) = 1$

24) $\ln(-3x-1) - \ln 7 = 2$

25) $\ln(x-3) - \ln(x-5) = \ln 5$

26) $\ln(4x+1) - \ln 3 = 5$

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Name_____

Logarithmic Equations

Date_____ Period____

Solve each equation.

1) $\log 5x = \log (2x + 9)$

{3}

2) $\log (10 - 4x) = \log (10 - 3x)$

{0}

3) $\log (4p - 2) = \log (-5p + 5)$

$\left\{\frac{7}{9}\right\}$

4) $\log (4k - 5) = \log (2k - 1)$

{2}

5) $\log (-2a + 9) = \log (7 - 4a)$

{−1}

6) $2\log_7 -2r = 0$

$\left\{-\frac{1}{2}\right\}$

7) $-10 + \log_3 (n + 3) = -10$

{−2}

8) $-2\log_5 7x = 2$

$\left\{\frac{1}{35}\right\}$

9) $\log -m + 2 = 4$

{−100}

10) $-6\log_3 (x - 3) = -24$

{84}

11) $\log_{12} (v^2 + 35) = \log_{12} (-12v - 1)$

{−6}

12) $\log_9 (-11x + 2) = \log_9 (x^2 + 30)$

{−7, −4}

13) $\log(16+2b) = \log(b^2-4b)$

$\{8, -2\}$

14) $\ln(n^2+12) = \ln(-9n-2)$

$\{-2, -7\}$

15) $\log x + \log 8 = 2$

$\left\{\frac{25}{2}\right\}$

16) $\log x - \log 2 = 1$

$\{20\}$

17) $\log 2 + \log x = 1$

$\{5\}$

18) $\log x + \log 7 = \log 37$

$\left\{\frac{37}{7}\right\}$

19) $\log_8 2 + \log_8 4x^2 = 1$

$\{1, -1\}$

20) $\log_9(x+6) - \log_9 x = \log_9 2$

$\{6\}$

21) $\log_6(x+1) - \log_6 x = \log_6 29$

$\left\{\frac{1}{28}\right\}$

22) $\log_5 6 + \log_5 2x^2 = \log_5 48$

$\{2, -2\}$

23) $\ln 2 - \ln(3x+2) = 1$

$\left\{\frac{2-2e}{3e}\right\}$

24) $\ln(-3x-1) - \ln 7 = 2$

$\left\{\frac{-7e^2-1}{3}\right\}$

25) $\ln(x-3) - \ln(x-5) = \ln 5$

$\left\{\frac{11}{2}\right\}$

26) $\ln(4x+1) - \ln 3 = 5$

$\left\{\frac{3e^5-1}{4}\right\}$

Name _____

Natural Logarithms Equations Maze

NO CALC!

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

START: $\ln e^x = 6$

$\ln x + \ln 3 = 4$

$\ln e^{x-2} = 14$

$e^{x-2} = 5$

4

$\frac{e^4}{3}$

$\ln 10$

6

$\frac{7}{2}$

$\ln\left(\frac{7}{2}\right)$

$\ln\left(\frac{2}{7}\right)$

16

$2 + ln5$

7

$\ln x + \ln 4x = 2$

$4e^x = 14$

$e^{\frac{x}{2}} = 4$

$e^{\ln 3x} = 12$

$\frac{e^2}{4}$

$\ln 3$

$4 \ln 2$

$\frac{e}{2}$

$\frac{e^3}{2}$

$2 \ln 7$

$\ln 4.5$

$\ln 8$

4

36

$-2 + \ln 2x = 1$

$41 - e^{2x} = 5$

$e^{2x-3} = 1$

$\ln x + \ln 5 = 3$

$2e^3$

$\frac{3}{2}$

$\ln 3$

e^6

$\frac{e^4 + 2}{3}$

$\ln 6$

$\frac{2}{3}$

$\ln 1.5$

$e^{1.5}$

$\frac{e^3}{5}$

$\ln(3x - 2) = 4$

$e^{4x} = 9$

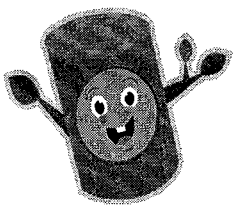
$\ln(x + 1)^2 = 2$

STOP!

$\ln 20$

$\frac{\ln 3}{2}$

$e - 1$



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1-2

Natural Logarithms Equations Maze

Fact: $\ln e = 1$

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

START:

$\ln e^x = 6$

$x \ln e = 6$

$x = 6$

6

$\frac{7}{2}$

$\ln x + \ln 3 = 4$

$\ln 3x = 4$

$3x = e^4$

$x = \frac{e^4}{3}$

$\ln\left(\frac{7}{2}\right)$

$\ln\left(\frac{2}{7}\right)$

$\ln e^{x-2} = 14$

$(x-2)\ln e = 14$

$x - 2 = 14$

$x = 16$

16

$2 + \ln 5$

$e^{x-2} = 5$

$(x-2)\ln e = \ln 5$

$x - 2 = \ln 5$

$x = 2 + \ln 5$

7

$\ln x + \ln 4x = 2$

$\ln 4x^2 = 2$

$4x^2 = e^2$

$x^2 = \frac{e^2}{4}$

$x = e/2$

$\frac{e}{2}$

$\frac{e^3}{2}$

$4e^x = 14$

$e^x = \frac{14}{4}$

$\ln e^x = \ln \frac{7}{2}$

$x \ln e = \ln \frac{7}{2}$

$x = \ln \frac{7}{2}$

$2 \ln 7$

$\ln 4.5$

$e^{\frac{x}{2}} = 4$

$\ln e^{x/2} = \ln 4$

$\frac{x}{2} \ln e = 2 \ln 2$

$\frac{x}{2} = 2 \ln 2$

$x = 4 \ln 2$

$\ln 8$

4

$e^{\ln 3x} = 12$

$3x = 12$

$x = 4$

36

$-2 + \ln 2x = 1$

$\ln 2x = 3$

$2x = e^3$

$x = \frac{e^3}{2}$

$2e^3$

e^6

$\ln 2.4$

$41 - e^{2x} = 5$

$e^{2x} = 36$

$\ln e^{2x} = \ln 36$

$2x \ln e = 2 \ln 6$

$x = \ln 6$

$\ln 6$

$\frac{3}{2}$

$\frac{2}{3}$

$e^{2x-3} = 1$

$\ln e^{2x-3} = \ln 1$

$2x - 3(\ln e) = 0$

$2x - 3 = 0$

$x = 3/2$

$\ln 1.5$

$\ln 3$

$e^{1.5}$

$\ln x + \ln 5 = 3$

$\ln 5x = 3$

$e^3 = 5x$

$\frac{e^3}{5} = x$

$\frac{e^3}{5}$

$\ln(3x - 2) = 4$

$e^4 = 3x - 2$

$\frac{e^4 + 2}{3} = x$

$\ln 20$

$e^{4x} = 9$

$\ln e^{4x} = \ln 3^2$

$4x \ln e = 2 \ln 3$

$x = \frac{\ln 3}{2}$

$\frac{\ln 3}{2}$

$\ln(x+1)^2 = 2$

$2 \ln(x+1) = 2$

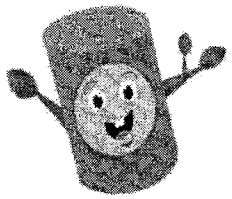
$\ln(x+1) = 1$

$x + 1 = e^1$

$x = e - 1$

$e - 1$

STOP!



Jean Adams